

# DRAGON



# USER

June 1987

*The independent Dragon magazine*

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Why the Dragon hasn't been developed as a business computer ... see **DejaDOQ** user group ... Hi zoom leavies.

### News Desk

Show organisers speak ... Guidebooks new address ... BoulderCrash upgrade ... HEDM MOON listing competitors ... new GB Micro Group address.

### Dragon Soft

Adventure Writer from Cowen Software, Predictor from John Penn and a couple of Alpsbits, both from Microdeal.

### All set at Ossett

Our main advertiser reports good vibes and snarrows from the John Penn Ossett Dragon Show.

### Dragon words part 2

Roger Henshaw looks in detail at three Dragon wordprocessors: Minixit, Synograph and Telewriter.

### Graphics screen wordprocessor

Dr Anthony Daniels's word processor uses the Dragon's graphics pages to make complex page layout simple.

### Dragon Answers

Single drives into twin drive, numbers to any base, saving Dream source code.

### Expert's Arcade Arena 20

The Expert investigates Premier's attempts, pokes Mixer's Dream, and there was going to be an Airball map but it hasn't arrived...hold on what's that whistling noise...? ("It's a 'tut'") normal service will be resumed when the Editor regains consciousness — RE.]

### The Answer

The solution to the March competition.

### Boxing data

Mike Bucker displays data fields with field separators — in, he boxes them.

### Winners and losers

Gordon Lee looks at a selection of entrants for the January competition, including the winning listings.

### Write: ADVENTURE

This month Peter Deward gets down to the nitty gritty of developing a vocabulary and getting it into the computer.

### Adventure trail

Yet another hefty slab of tips from readers and from Peter Deward, as well as maps of Synograph and Simple of them.

### Competition

This month's Gordon Lee puzzle involves the numbers seven and (more mysterious still) seventeen, and (more mysterious still) we're not telling you what the prize is...

## Editorial

This month's issue has two items on word processing, in response to requests over the months for more on the subject. Now, I know that you are not going to sit down and write your novel over the summer. You've got better things to do (like gathering material on a beach in Tenerife), but this should set you up with some ideas when you sit down with your printer as the evenings begin to draw in. Not for a while, thank heavens. Talking of printers, next month will see the Great Printer Roundup, reviews and advice on a dozen different printers from a dozen different users. If anyone wants to send in a printer dump, now's the time.

After that, we'll start gathering information for a review of disc drives and DOSs. If you want to contribute, sharpen your WPs and drop us a line. I shall expect another letter from DUDE soon...

And we could do with some more reports from the London 6609 Show, especially from people who attended or exhibited at both London and Ossett.

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### How to submit articles

The quality of the material we can publish in Dragon User each month will, for very good reasons, depend on the quality of the disclosures that you can make with your Dragon. The Dragon computer was founded on to the market with a powerful version of Basic, but with very poor documentation.

Articles which are submitted to Dragon clear for publication should not be more than 2000 words long. All submissions should be typed. Please leave wide margins and a double space between each line. Programs should, whenever possible, be computer printed on plain white paper and be accompanied by a tape of the program.

We cannot guarantee to return every submitted article or program, so please keep a copy. If you write a program or program material you must include a stamped addressed envelope.

# Letters

## Loan arranger

I'VE tried all the usual sources (so lucky) and I desperately require the loan of the manual which accompanies Morrison's Pascal Compiler. Morrison Macoshaive some detail, and I'm not sure.

Equally desperately needed is the DeltaDOS disk and manual. I have a reasonable of software and I am sure I must have something I could swap.

Finally I am trying to locate a book called Adhocracy Programming with Delta-DOS. Somebody must have bought a copy! Nearly forgot, I'm also a dead or nearly wounded Oregon-DOS cartridge — maybe one that also contains a dog? I've seen pages of April DU — oh, never mind!

Many thanks for coming to the refresh and see you Dragons in park that other Dragon programmes have failed to reach!

Paul Read  
T. Finance Advisor  
Whitstone  
Leicester LE19 3AG

## Pete prog

I THINK the magazine is great but would like to see some more basic programs rather than machine code ones.

I am interested in programming and would like to hear from any Dragon owner called Peter, through once who would like to exchange ideas on this subject.

Andy Maloney  
28 Chestnut Ave.  
Gosport  
Peterborough  
Cambridge PE1 4JF

## Call from the North

THE fact that Dragon shows are becoming more common is heartening but why are the majority of shows held in England and Wales? I admit that the majority of Dragon users live in England but there are many in Scotland and Northern Ireland and even those who do not wish to travel there, if in England is difficult to attend, not because I'm not interested but because

Every month we will be shelling out a game or two, courtesy of Microdeal, to the readers who send the most interesting or entertaining letters. So send us your thoughts and your opinions, send us your hopes and suggestions. Send us your best Dragon stories. What if you think we are, well readers??

EXTRA  
PUFF

## Brain Storming . . .

I WOULD like to expand on some of the letters and answers in the March issue and also remind you that they are not entirely satisfactory.

Firstly to Tony Saunders: The colour enhancement suggests something made by Premier in 1984 with a very basic graphic board with graphics on the 20" screen and a 640x480 pixel colour board 32 bits, and text by using the 16-bit chip as incorporated in other more powerful computers. At a cost of £10? I don't believe it was very big letters and of course Premier have long since ceased trading. I believe are advertised for £125 each. The disadvantage with these cartridges is colouring them for a disc controller and it will only work on a 32. There are plenty of software options which give four channel sound (gears), 40 lines, 40 lines, and a 40 lines (up to 32) by using an interface. I believe software is by far the cheapest, easiest, and most flexible solution for these facilities.

The 66 colour text screen is already available as a 66. Saunders would be using the read Dragon User and the 66. It comes as the Dragon Plus board, which gives 128x64 and 64x32 pixel screen. The disadvantage of this that you need a 64 and 32 pixel screen, and the colour 128x64. However, I believe it has done well for Commodore, and while there are not an abundance there are certainly not better about. The other disadvantage is for use in that the 66 colour screen, would be a pity use if you had software to use it, which either means writing your own, or going into OS-9 or FLEX which adds up to the cost.

Now as I would be using the 66 items at the prices Tony suggests, then it is being a lot of effort. Even if Commodore could not at their prospect, the cost of development and production of these items combined with the low volume sales rate at the price ranges he suggests.

Likewise, the possibility of the Dragon entering the home market is remote when one considers the low cost of a purpose designed business machine these days, and the home use is almost to consider seriously to the price differential between the Dragon and buying a new machine. The difference is not always that great.

Now in reply to S. R. Clayton: Your comments are very useful. Between printers and disc drives. To reply to you what is a complete subject: The DOS for the Dragon is a ROM cartridge. The only supplier PMP Communications 0379 654465. For £79 you will get the DOS plus a lead. They can also supply the drive, which will then be ready to plug in and go. You would save money by buying a second hand drive and building your own power supply if you feel really confident as a full power supply is a great way of following up on your own machine. Your idea of a supply drive from a computer store (even the DOS) would give a complete package from PMP provided their drive prices are not excessive.

Philip Reed, 27 Pindar Road, Bilton, Gosport, Hants PO12 4EP

THANKS, mate, I try to avoid giving long replies on the Letters Page unless there's a good argument involved. We have Mr. Caidge for technical queries. A well informed letter full of useful information, like this one, is another matter though. The reply is all. Clayton was total and after business I was totally speechless when it came to page 8 and read the immortal words "The whereabouts of the DOS depends entirely on the printer." The law that happens here is that we are finishing a copy by a guttering candle stub just after midnight.

could not afford the train fare and I just don't have the time. Just imagine how much the train fare from Inverness to London would cost if a reader from Birmingham spent £25. Would you like to see some of all of you Dragon companies and start thinking of organising shows south of the border, otherwise you might find yourself losing customers which you need most.

Donald Morrison  
79 Denbigh Rd  
Inverness  
Scotland IV1 3DT

THERE has been some talk about where shows should be held. London is a problem, because far and away the most people come to London shows, but venues are harder to find and much more expensive to hire and hire. To far north, and many of the small but vital companies who supply the Dragon would have to make one for even two overnight stays, thus doubling their costs and losing two extra days' work. Dragon shows at the moment are based in a triangle with London, Oxford and Cardiff, the points, and these places have proved so successful to all our suppliers most of the time.

This is tough on people who live in the antipodes. How about getting a minimalist together for the next show? Taking a car costs more than the train for one person, but begins to look attractive for three or more people.

## Try again . . .

I WRITE a letter earlier this year in DeltaDOS, and sadly it was the subject. Six months later, the front cover showed that there was a letter from someone regarding the aforementioned subject. However, on reading the letters page I found to my dismay that there was in fact nothing about DeltaDOS at all. I hope that letter will be printed as I feel that DeltaDOS users deserve as much attention as any DOS user. After all, it was your review that showed DeltaDOS to be superior to DragonDOS.

I was interested in the review Roy Cross gave to BASH42 in November's issue. It sounds a remarkable product, but I wonder why Baskit by Premier was never given the recognition it deserved. Run on DeltaDOS and coupled with SC988E, Premier provided a superb system long ago. Baskit is an option, fitted to your controller, giving about 90 extra basic commands and SC988E is an add-on, giving times text screens, etc.

Why was there no Delta data included in Baskit/Cadgle's firmware series? Are there any DeltaDOS user groups out there? If not, is anyone interested in forming one? I for one need information from more experienced users might have, is how to convert certain programs from tape to disc, etc.

Dr R Martin  
44 Fyfe Road  
Preston  
Southampton  
Hants.

DAVID Martin has now started a user group for DeltaDOS, called DAUD (Delta Users' Data Exchange). Several people have already been in contact and says David "I haven't only received help, but have also been able to assist others with information, etc." DAUD can be contacted at the address given here, or by phone on (0703 388412).

## Request 'position'

I WOULD like to buy the game Juxtoposition. Please can you tell me where I can get this (how much it would cost me)?

Andrew Lamb  
Colerod  
2 Macdon Road  
Aspel Grove  
Stockport  
Cheshire  
SK7 5JJ

JUXTOPPOSITION is now sold by Microdeal (0755 586265). I don't have a recent price check on that one, so give them a ring and ask. This is good practice when buying anything from an advert more than a couple of months old, by the way.

## Thanks a lot

I READ with great interest Jason Critcham's review of Fire Force and must say on this occasion that I fully agree with his comments.

It is a short time DU honestly said what they think about a game instead of giving it another Dragon 'too they've continued their support'. In this case, the review was totally justified; the game offers little in

the way of detection and seemingly contains many errors, one of which is the price. Nice graphics, great sound, shame about the game!

Simon Jones  
(Oxford)  
37 Colling Mead  
Marlow  
Epsom  
CM9 4DN

AM have this dream... I have this dream that one day the wealth of one percent of DU readers who haven't noticed it yet will find a way of put-

ting their opinions across without staggering someone else out.

Aren't you the chap who wanted us to give you more editorial support?

And the comment on another reviewer which had to cut from this letter was no less boring and potentially libellous (just because it referred to a different publication).

Your remark about extra Dragons is a gift of rubbish, as any number of people who are now looking for Jason with an axe will testify.

## Hi Score Corner

For all these desperados who desired to define how many eggs a chicken could chuck, we have accumulated the following testimonials:

I AM desperate to know if I've beaten the highest score on Chuckie Egg, which was 158870 points, level 17. Whereas my highest score is 118007 points (level 11) (WAG212) 151533 points, level 18.

Paul Latham, aged 13  
149 Thaxel Road  
Canvey Island  
Essex SS9 5SL

I WOULD be very grateful if anyone could tell me what the high score for Cast Star from Design Design is. My highest is 1113 points, 12 planets and 48 bases.

Neil Liddock  
Paul's twin brother  
Aged 13

BUT ONCE you start mopping up hi scores you are in the international arena, where defeat is as the victory, and the blood of martyred fingers stains the keyboards. Now comes from far off St. Helen's (a relation):

WHILE reading January's issue I came across a letter from Jonathan Baker and saw his hi score for Chuckie Egg was 158870 level 17. He told me that he'd written it and there's one complaining about being called 'Dear Sir'. To know the hi score for Chuckie Egg was the highest I have ever got (123570 level 22 and there's two ducks and one macdodd and I want to know if anyone has got higher. I would like to thank Steve for all the help he has given me. And

can I thank Mark Thomson of Ashton Green for lending me Dragon User (I said it looks really) and can anyone tell me if there's a Dragon user club in Herefordshire. And if so can they please contact me. And can Simon Chanley Hill Farmington tell me if you phone him between 4 o'clock and 4.30 on weekdays and weekends (before lunch). And anyone needs help on Teletext or Snoppy please phone or write.

Paul Latham  
40 Siclaw Avenue  
Park St. Helen's  
Merseyside  
WA9 7JD

I WOULD be pleased to see that my article concerning the 8800s show was printed in the March DU. However I am disappointed that to date I have not received the promised payment. I look forward to receiving this in the near future.

As do we all, Mr. Wilkins. See page 6 of the May issue for further information. Mind you, we aren't infallible. Going to an editorial oversight, we sent Ken Smith's cheque to an entirely different Ken Smith, who fortunately for us sent it back. Speaking as a former member of the clique, I can assure nervous contributors that Smiths are particularly prone to that sort of mix-up. But back to our writer:

I enclose my hi scores. I stress that these are not POKE aided.

Space War 16570 Tim Laves  
Cricket 180 not out Supercol  
134 yards Sporting Scotland  
1080 Talking Android Attack  
33350 Hungry Horses 2.4.478  
Penguins Freddy 76216 Hinx  
Warrior 38608 Uge 85214  
Whirlwind Run 38606 Mr Dig  
620000 Scores by Tim and  
Howard Wilkins and Simon  
Giles.

Tim Wilkins  
"Chasford"  
104 Moss Hyde Lane  
Larkfield  
Middxshire  
APR/M220 0PS

HANG-ON, I'm just looking in the rule book to see what it says about committees. Oh. One wrote it. Oh well.

Y'know, the trouble with hi scores is, how do you know your opponents aren't cheating? Of course, Dragons don't fit, but lesser breeds might be tempted by natural feelings of shame or inferiority. One may round this to be take a glory of your hi score screen. I used to know a gentleman who scored 90 screens (or something) on a games machine. Now how so many person hours been expended on a small monochrome device which went (j|poo!) every time an asterisk wiped someone out. Funny thing was, there were only supposed to be 26 screens. He took a photo of the frame and sent it to the makers, who sent him a shiny shiny aftercard. The game nor complicated the machine for the good of the department, and he hasn't been seen since he probably still has it. Ah, there were the days.



# News desk

If you have any new products for the Dragon — software or hardware — ring the News Desk on 01-607 4302

## Show organisers speak out

POLL: Did the London 6808 Show last month and the Coast Dragon Computer Show on April 18th, Dragon User asked the organisers how their respective events looked after closing time.

Jeremy Pope of J P Productions was being philosophical. "It looks even as made-up as profit" should admit, "but I won't be doing another show like this. The number of people was down on last time, and it just costs too much." Jeremy's comments about cover night costs lined up with what many of the suppliers told us on the day, but she sounded more pessimistic in tone. I put this to rest.

"The people who were doing their own software seemed quite happy and said they would come again," she enlarged. "The third party dealers were not very happy — they would really like to see twice the number of people there. The Horticultural Hall was a bit of a disappointment and I think it's too big for this kind of event now."

I mentioned that a number of people in the trade thought that the March show was a bit too soon after the successful November show at the same venue. "No, seriously" she said. "I thought Easter would be a good time to have the show, but couldn't get the Halliford and

as I had to take two steps back. Other computers' support has made shows a year, so I don't think it was too soon." What about an outdoor venue? "We're tired. Having shows in premises like this, but only about half the number of people turn out. If you can't put everything in this kind of London, you're wasting your time."

We at DU wondered about the 'other computers' and made some brief enquiries. Electron and CH users are admirably well-served, but they ride on the back of the other, current BBC and Commodore machines. Users of other out-of-production machines rely on trade shows to 'use your group level'. Nobody could remember having been to a CH show.

Seeing this in mind, remarks of John Peck, *Dragonware* Software, organisers of the Coast show, were interesting.

"We had about 600 in at the day, not including children in families, which is more than last time. We don't get as many people out here as we would in London, but it's a far smaller venue, with a nice, close atmosphere. There were a couple more suppliers, and a lot more people just doing exhibitions, showing off their home-grown software, that sort of thing. We didn't want it to be just a bring-

and-buy sale, so we asked anyone who felt that they were doing something interesting on the Dragon to come along and show it off."

"I was busy all day I spoke to everyone there, and they all seemed pleased and most of them are lined up for next year already."

"We run the Show a bit like a co-operative. We take all our expenses out, but after that the gate money is divided between the exhibitors. This means that no-one will make a big profit from organising the show, but no-one takes a big gamble by coming along, either. If people know themselves will be covered, it makes it easier for even the very small suppliers to attend."

Will there be another show this year?

"We're looking at Cardiff again, because that's a good place for exhibitors to go, they can get there and back in a day. It won't be till after the summer, possibly November. Nobody plays with their computers much during the summer holidays, so they?"

We at DU see a vast market for portable battery packs on their own terms.

See pages 8-9 for the Coast Show report. More reports on either show are welcome.

## Club call

Mr R. Ball of Portpool wants to start a local Dragon user group. If you are interested, please write to him for further information (and with any suggestions of your own) with a stamped self-addressed envelope to R. Ball, Penleigh, 78 County Road, Grinstead, Portpool, Coast NP16 6LN.

## Micro members

THE 88 Micro Group have a new address for their membership secretary, which is: Mr. Keith R. Barnes, 19 Glen Albyn Road, Wembley, London NW10 6HD. The group publish a roughly bimonthly bulletin, *Microcom*, hold monthly meetings in London at the Prince George of Cumberland in Albany Street, M1, and are setting up meetings in the Birmingham/Country area in the near future.

## Missing persons

WTF have a reader's enquiry for John Carmel, about a question which appeared in the April *Dragon Answers*. Unfortunately we don't have Mr. Carmel's address, so if he doesn't mind answering a query perhaps he could drop us a line.

**APOLGISES** for the faulty listing which appeared with *April News* in the March edition. Here are the correct exit values.

2400 DATA 77, 12, 05, 77, 32, 12, 12, 05, 05, 01, 07, 77, FF, 00, 77  
2500 DATA 7600, 00, 04, 07, 77, 00, 00, 00, 07, 77, 01, 00, 01, 07, 77, 00, 07  
2600 DATA 00, 76, 00, 00, 76, 00, 00, 76, 00, 00, 76, 00, 00, 00, 76, 00, 00, 00, 00  
2700 DATA 00, 01, 04, 00, 01, 00, 01, 01, 00, 01, 01, 00, 01, 01, 00, 01, 01, 00  
2800 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
2900 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
3000 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
3100 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
3200 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
3300 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
3400 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
3500 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
3600 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
3700 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
3800 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
3900 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
4000 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
4100 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
4200 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
4300 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
4400 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
4500 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
4600 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
4700 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
4800 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
4900 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
5000 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
5100 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
5200 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
5300 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
5400 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
5500 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
5600 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
5700 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
5800 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
5900 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
6000 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
6100 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
6200 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
6300 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
6400 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
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6600 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
6700 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
6800 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
6900 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
7000 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
7100 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
7200 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
7300 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
7400 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
7500 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
7600 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
7700 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
7800 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
7900 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
8000 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
8100 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
8200 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
8300 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
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8600 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
8700 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
8800 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
8900 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
9000 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
9100 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
9200 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
9300 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
9400 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
9500 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
9600 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
9700 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
9800 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
9900 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00  
10000 DATA 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00, 00

## Quick moves

QUC is their recent expansion. QuickBom Software have changed their address. All orders and enquiries should now be sent to QuickBom Software, 16 Salisbury Road, Hordesdale, Here EH11 0HX.

## Better Boulder

WILL known game Paul Burger has completed a utility to install and improve *Boulder Boulder Crash* in new sold by R. A. J. Preston.

Price £3.50 including all postage and packing. The program's main features are:

- Floppy screens to allow 32 screens instead of 10
- A comprehensive screen editor (similar to Region 3 for other computers) which includes save/load, and freeze pictures.
- A banking menu for extra or infinite lives.
- A computer controlled '99' program to adapt your *Boulder Crash* for editing. This only has to be done once, and does not damage the original game.

Paul is also offering a *Hackers Challenge* — a free copy of *Hypertek* goes to the first DU reader who breaks into the program (and can describe what he's doing to the organisers).

The program, codenamed *Boulder Crash*, can be had from Paul Burger at 18 Moorland Road, Sheffield, S10 4DQ. Payments should be made out to Paul. Please enclose a copy of *Boulder Crash* if it is not part of the package: this is aimed at people who already have *Boulder Crash* and apologise if it could give the old rock a new lease of life.

## Thanks

Thanks to everyone who volunteered to review *Prodigy*. The review will be appearing on page 2.

## Dumps please

IT looks as though we'll be publishing our review of printers in the July issue, so anyone who wants to send in a reliable screen dump program, please send it to 2. We'll print the whole lot in one go.

# Dragonsoft

New software for review should be sent to: Dragonsoft,  
15-15 Little Newport Street, London WC2H 9PP.

## It's my ball so . . .

Program: *Airball*  
Supplier: Microdeal  
Price: £5.95

SOMETIMES during the Christmas/New Year stretch, Microdeal's latest promotion leaflet arrived advertising *Stone Heiden* (what happened to FT), a sort of *Scudler Crash* clone, and *Airball* with a format along the lines of the successful *Wizard's Quest* (I'm assuming), but left the advert full of striking my idea of Dragon literature.

A couple of weeks later, five Souths Tinger talking for something new is (said to be), or jump under and over, led me to *Airball* in the *Airball* order form, get a loan for a first class stamp and send away to those Cornish berds.

Microdeal's mailing system is normally excellent, in the past I've had orders from St. Austell back to my home in flapcap and sheep land four days after I posted them. However, this time I waited and waited, waited once again. Nothing arrived, so either the postman had a personal vendetta against me or something had gone wrong.

In fact the game's release had been delayed due to a programming problem, eventually arriving at my humble abode during early March a few months later. Eyes pulsating, mouth agape, I loaded up the normal title page, with a burst of music (just written music) and then the game itself which may be the uncredited on first sight look like *Wizard's Quest*, and I suppose in essence it is just a continuation, but it has been advanced and developed much further than the earlier title.

You are an inflatable ball (well, at least it's original) and begin by jumping an info window to allow you to become aware of the world. Boom, you found, too little, you deflate.

Having inflated myself I then deflated my eye by torturing myself by acquiring new performance than a lead pig. How did I do this? Oh no, no, no, objects scattered around, spiky spheres left indiscriminately, some with flat tops which allow, with care, you to jump onto them, and others needing joystick precision to reach just. Also, there are floors with

graphic skeletons which result in you exploding immediately, unless you can manoeuvre yourself across a series of scattered steps floating above the skulls.

The graphics are detailed and pleasant, portrayed in a 3D manner similar in format to the Spectrum game *Raggle Taggle*, although they are a bit tricky to get accustomed to as with the added dimension of depth you sometimes disappear behind walls and therefore control yourself while you can't see where you're going — a bit like driving looking out of the rear window. Mapping is also proving hard, for instance, how do you construct an effective 3D chart, or manage to reduce it into 2D usability? Also you can pick objects up en route — I never knew balls had hands, although I suppose legs is never top priority in computer software. (I'm obviously haven't



seen the movie "Dark Star" — Ed.)

Apart from these pedantic quibbles this is a fine game, not as flowing as *Wizard's Quest*, more tactical and strategic rather than running around at breakneck speed, and is certainly harder than its predecessor.

My truly old Dragon has also now blown up and so I sit

waiting for its return to health after a top transplant, I wish the flowers could have spent on *Airball* if only it could have been released on time. Meanwhile my joystick substitutes existing the future before this game will unleash on it.

Philip Scott



## Snails and puppy dogs' tales

Program: *Superkid*  
Supplier: Quickbeam  
Price: £5.95

WAYNE Smithson's latest offering *Superkid* must be rated as his best so far. The subject of the turbo-loaded game is to guide our hero in his efforts to save the ubiquitous damsel in distress. 'You don't need me to tell you that this is a scary task. Even a simple stroll down the smelly scotting tree-lined road is hampered by sneaky snails, solitary bees, and clammed dogs.'

The well clipped speech, which gives such encouragement as 'Go get 'em Superkid' and 'Well played' are almost cancelled out by the (ironic?) shout of 'Superkid!' at the end of each game, although this is so bad it is actually funny enough to reduce you to a hysterically laughing wreck.

The snail pace has problems as they are easily jumped over or disposed of using 'the weapon' (if you can get it) (A poaching gun and a couple of cloves of garlic? — Ed.). The bees have an annoying habit of swooping up and down with unnecessary accuracy and landing on

your head. Although these are basically crates to be eliminated using 'the weapon', it is a bit easy to judge their position, and trying to avoid them becomes a little maddening when you have to avoid snails and dogs as well.

Now for the dogs! They are traditionally known as man's best friend, but what if these hairy hounds will stop and wait every time you do, just to make sure they can nuzzle the most treble. There they sit with their tongues hanging out looking oh so innocent, well don't you believe it, the crafty canines cannot be destroyed, and must be avoided at all costs.

I was lucky enough to be given a review copy of *Superkid* with extra lives, but even so I didn't do as well as I would like even after playing the game for a considerable time. Some games are just hard, but this one isn't and you can only blame yourself when things go wrong. It isn't too difficult to get your name into the score table but getting to the top will require a fair bit of work. The 'select a letter' method of entering your name seems just as hard as the game itself, but most genuine arcade games are the same.

The music accompanying the game is yet another masterpiece from Chris Jolly and is a bluesy rock arrangement that once again makes you think it is time to part with your hard earned to get a copy of the AM2 program. The graphics are extremely nice and again are slightly larger than the sprites that we have become accustomed to. The game is best played in colour as the colour mix is sometimes a little hard to distinguish on a monochrome monitor. There are many nice little touches, such as *Superkid* dancing to the music on the title page, which make this a very professional package.

This is probably the game that has most appealed to me in the last year or so and is one of the few games that I know I will play again and again. Get your wallet out, and let's hope it cost £5.95. (Not quite, Roy, but these folk have to eat. By the way where are we going to get some more Microdeal stuff to review? — Ed.)

Roy Coates



## ... I'm gonna play

Program: *Artful*  
Supplier: Microdeal  
Price: £3.95

BEFORE I bought my copy of *Artful* I had great expectations of what the game would be like, and it has lived up to my expectations.

*Artful* is the follow up to Edward Solo's *Wizard's Quest*, and that in itself must indicate the game's high standards. For anyone who fears that *Wizard's Quest* was disappointing, let me say that *Artful* is a much more challenging and often plotted game.

The story has the evil wizard from the earlier game turning you into a ball and sending you to the dungeons to find and return a spell-book so that he can become more powerful. Assuming you take on his challenge and succeed you will be faced with the opportunity of turning yourself back into a human—after all, who wants to be a ball!

As well as having to collect the spell book there are various other objects which you must locate such as the Dragon, a Wand, a lot of beans — no wizardries please!

Right, that's the story. There are actual moments, but he needs them when there are three different kinds of spikes

strewn across the maze. To make things worse there are killer pits, are touch-of-which could prove fatal. And the ball which you control using the keyboard of a joystick has a slow pace and in order to stop the pressure reaching zero you have to jump on a pump, but not for too long, or bang you'll burst, and it's not a pretty sight.

The graphics are excellent, the best I've seen and credit should go to Ed Solo who is an excellent programmer, and to Paul Shields for the excellent sound. The graphics are in black on white and everything is depicted beautifully.

When a company like Microdeal produce such an outstanding program they deserve a little support. They can get it, I would urge those who have credit cards to join the Duty One Club. As well as getting some releases for half price you are helping to bolster Microdeal's support for the Dragon. To sum up then, an excellent game although admittedly quite difficult. *Artful* is destined to become an arcade classic. As you'll probably have gathered, I loved it!

Donald Interson



## Knit your own hero

Program: *Adventure Maker*  
Supplier: Cowen Software  
Price: £8.50

A FEW years back a utility called The Quill was released for the Spectrum and other popular machines, this enabled the general computer public at home to create their own adventures. As well as the more (and still is) no Dragon version was available.

Finally though, Cowen Software are producing *Adventure Maker*, which as the title rather gives away allows you to write your own adventures.

The writer's package consists of cassette with the standard text adventure program on one side, and on the reverse the facility to incorporate Random Word and DCS. Also there are two user manuals which take up

25 pages of A4 between them, all of which has to be read, unhelped and unread several more times before you can attempt to dive down into the dungeons of your own adventure world. The notes themselves are comprehensive and concise, showing the features and giving examples.

First stage is practice of using database through the *Formulator* program, then comes the second stage, which is the heart of the system, the Editor, where the adventure itself is constructed and to which it will return, and finally the *Executer* which runs the finished masterpiece. There is also an example adventure to illustrate some of the basic techniques and facts.

Back to the Editor. This is where you locations, etc. are entered. To try and show the

commands impossible, with this review, but you can do just about anything you desire, and you have no memory which is 256K standard and 128K on extended versions.

You can have objects to carry, new break-up to 65536 locations in which you can have the old game of making rooms dark, which in 80% of adventures is overcome by "light candle" or "big can" if the game accepts abbreviations, as this utility does, allow. The finishing touches such as automatic scrolling also are there (it's a pity *Adventure Maker* international never used its program along with many more commands).

If you can, then you could produce a very good adventure, leaving you to market your game, give a copy to friends, or even mail *Adventure Maker* down into a modern sculpture, as you can load up a completed game totally independently.

I've yet to write anything resembling a decent game from

this language, I call it a language because that is basically what it is, machine code or Fortran. You have to become proficient in the commands before starting.

That doesn't stop me seeing the value of this offering — the fact that Cowen's *Adventure Maker* was written in this system shows what can be done.

So if you are a half decent programmer producing half decent games, try this as it might give you the extra 50% you need. I'm only giving it four Dragons, firstly because I haven't given me all the extra 75% I need to write a good game, but mainly as it does seem a little dated — text adventures aren't exactly vague nowadays, and the extended version only gives that to play with. Otherwise it is just about all you can expect from a 256K Dragon, even if it is three years too late.

Philip Dove



## Not a winner this time

Program: *Predictor*  
Supplier: Bantley (John Fenn)  
Price: £4.00

THIS program itself tells you that *Predictor* is a utility program which predicts the results of horse racing (both National Hunt and flat) and football matches (both League and Cup). Regrettably, what it does not tell you is the amount of information required to arrive at a prediction. Messrs Bennett and Harley have worked hard at their program and it, in turn, makes the user work hard on the keyboard.

On the horse racing side, it asks for information then the given time, the number of odds, seconds, thirds and fourths, whether the horse is a favourite, distance winner, the extra weight if any and whether or not the going is the horse's favour. Subsequently you have to input the price in two halves as shown in the betting forecast. Finally, the number of times the horse has finished outside the first four and the number of races the horse was considered "in form".

Needless to say the prediction is based upon mathematical probability with differing weighting given to each horse depending on the information

submitted, and on a day when the favourites romp home, the program seems first rate; however, when the outsiders are first to cross the line, the program doesn't seem so good!

On the football side, a similar wealth of information is required — the points from the last six games, the position in the league, the "home form", the last four points, and the number of home games played. Similarly, the same information is required for the "away" games, and of course for the opponents. Inputting all this for 150 teams on a coupon takes a long time.

The program is, in my view, unfinished in its presentation. It does not allow a database to be built up so each week all that information for the football teams has to be re-input, there is no way of easily identifying what was actually done, nor is there a printout routine.

The newspaper's sports coverage and predictions are just as good, and much quicker to read, and, judging by the results of the *Grand National* the last day's happen is as good as any. Pull me down for effort, but only one Dragon, I'm afraid.

R. L. H. Howson



# All set at Ossett

Wince Gladhill visits the northern Dragon Show on April 11th

THREE minutes to go before the doors of Ossett Town Hall open to the third John Penn Dragon Show and only a banner then pinned outside tells me I am at the right place. No shuffling queues of impatient Dragon owners or the surging crowds of 1000 who made themselves sore at 8009 shows just three years ago.

At last, my reminiscences interrupted by the tolling of the Town Hall clock and guess what? In those few moments of missing a queue had actually materialised from nowhere and was steadily sinking up the Town Hall steps. I quickly made myself part of that elusive and short-lived phenomenon.

First port of call was, naturally enough, the empty-stocked John Penn stand. Bargain hunters were offered odds and cassette software ranging from OS-B utility programs to give-away prize-games (and you don't get more give-away than the £1 for a stack of programs in the bargain bin outside the side of the John Penn stall). At the other end of the display, John Penn's first venture into program publishing was being disseminated by its author, David Walker. David has written Music Maker, a program which allows sheet music to be copied directly onto an screen using graphic notes.

The technique sweetens my own pet hate of having to convert musical notation into data statements for Microdeal's Composer program and endless lists of figures and letters for Dragon Data's Music Lite program. In another part of the stall another solution to the same problem was being offered by Jonathan Cartwright who, with his father George, runs Starship Software. Jonathan's solution was to write Composer Companion, a program which is loaded after Composer to add a graphic staff and notes to it.

Composer was also used to produce a disc of twenty fugates and jazz compositions. The program is called D-Pee (D.P. goddard On well, never mind).

D-Pee and Composer, like Starship Software's adventure trilogy, Starship Destiny, Dangerous Destiny and Wild West Destiny are available from Microvision, which was also at the Ossett Show with a range of programs including Beethoven's Starship's other program, a hi res driver called Hi-Res-Test, is available from John Penn.

With slight Malcolms clanking out from just harmony at one end of the hall and D-Pee at the other, the display was alive with music (he said the Dragon could only speak?) and there was more.

From the Quickbeam stand Superdial the newest game from Wayne Smithson was on demo, blasting out not just music, but also some of the best emphasised speech I have heard from the Dragon, or any other computer for that matter. Music for Superdial was implemented using



Ossett Town Hall

DAT8, the DRAGON Advanced Music System program from Chris Jolly, which is used to track effect in Fire Force, that other Quickbeam top seller, but surprisingly Superdial was one of the first titles on the Quickbeam stand to sell out. That was the good news. The bad news is that Wayne thinks it might be his last for the Dragon. He is currently working on another Dragon program, but whether it will be released depends entirely on the sales forecast.

The other Quickbeam titles at Ossett included the immensely popular Shogun Master, Electronic Author and Galactic Gox, a 2D-section maze game written by Dave Emerson and highly recommended by Wayne Smithson.

Quickbeam was also selling one answer to those Dragon owners who complain that not enough programs are available on disc. That answer is Duplicitas 2, a tape-based program which will convert most cassette programs to run on disc. So far it has been successful in transferring about 60 per cent of my tape programs to disc.

The DMS music system was also on sale and an ear-shattering demonstration during the show.

Between electronic means of "Go get 'em Superdial" and the frenetic rhythms of the DMS demo I was just able to get a word with Malcolm Cowen on a neighbouring stall.

Around ten years ago Malcolm came across the classic Colossal Cave adventure on an IBM mainframe and soon came to the conclusion that writing adventures was even more interesting than playing them. He even managed to squeeze down his version of the Colossal classic to fit the Dragon 32, squeeze being the operative word. At the end of the program he had 56 bytes left. Malcolm was at the Ossett show to display and discuss his Adventure Writer program. Actually, Adventure Writer is three programs in one. It consists of an editor with which to enter and alter your program, a formatter and an assembler. Their combined aim is to make the computer do the boring bits of adventure writing for you. The program comes in two versions, the standard giving a maximum free space of 34K, for your adventure and an extended facility version which leaves

only 18K free, but allows the program to be used with a DOS or Rainbow Writer.

Good news also for those buyers of Adventure Writer who found the literature which accompanies it a bit daunting. Malcolm has produced some additional help notes which he is offering to anyone who feels they need them.

At the other end of the hall Ted Opychal was manning the Computime stand. He had with him a substantial range of hardware and software, mostly based on the Plus and OS-B operating systems, but nothing new among them for the Dragon. Applepie, but working64, with the Computime Dragon Plus expansion board inside, was also on show. The interface adds a 64K memory expansion to the Dragon as well as a 24 character 80 column display through an independent video chip. The extra memory can be used as a 'virtual' disc, increasing the speed of program and data delivery almost to the level of Ted Opychal's sales pitch.

By the time I had made my way to the Computime stall (admittedly it took a couple of hours since I got there via just about everyone else) the six expansion boards which Ted had brought with him had been sold — and at around a hundred pounds a shot no doubt for was wishing he had brought more.

More Dragon hardware was on offer at Ossett from PMP Communications. Sales of their Dragon Super DOS disc drive controller (fully compatible with Dragon DOS) have been going so well lately that the first production run has almost sold out and a second run is in the pipeline. A three-inch disc system for the Dragon is also under consideration at PMP.

The Newhaven-based firm also sells Dragon 32s and had them on offer at Ossett for £58 each.

In conjunction with Gowerline Software, PMP also supplies AGS Packed Radio for Dragon and Tandy using radio amateurs. Sales of it are reported to be going nicely.

The Dragon continues to be something of a cult machine with radio amateurs who use it to send software all over the country on the 2-metre FM amateur band.

Last year at the Ossett show three radio amateurs set up Dragons at either end of the hall and transmitted programs between them.

This year the hams were represented by Roby Amateur Radio and Computer Club.

Paul Read (G0J22) and Rod Wilkes (G4TQF) were demonstrating Paul's Amateur Radio Control Log program, which they say is all set to revolutionise radio control by eliminating so much of the graft involved in compiling competition data that what now requires a minimum of three people can be done by one.

Equally interesting was Paul's news that in a competition situation, which can often be a rain-scape field in the middle of nowhere, the Dragon users were fully tolerant with voltage peaks and troughs in the generator-powered electricity supply.

Another idea with all kinds of possibilities was also being demonstrated by Paul and Rod. For about eight quit, Paul tried a Dragon keyboard into a recorder case and linked it via a 15-core cable to his set. His original aim was to overcome the problem of an extremely high bottom disk which made programming uncomfortable. He built the remote keyboard to test it more comfortably on his lap during long programming sessions. It has been successfully tested up to twenty feet from the mother terminal and Paul is now considering a further extension to the idea by adding a keypad to the remote.

Paul and Rod also brought with them a graphics demonstration the likes of which I wouldn't have believed possible on the Dragon. The photograph of it which accompanies this article is a definite case of one picture being worth a thousand words. Neither Rod or Paul were sure about who is the author, but when it was intended to be the opening scene for a Dragon program which was never completed.

Keep yourself away from the fascinating Paul Wynn's stall and talk to Bob Harris of Harris Micro Software.

His range of disc-based utility software is led by Basic 42, the microsimulator of an operating system which transforms the Dragon 64 into DOS adding a host of improved features (see Roy Gostel's glowing review in the December 1986 Dragon full issue).

Basic 42 was extended in 1986 with Help and Speed utility programs. These other utilities have been added for 1987. One allows icons to be added to programs, a Price utility provides structured basis on the Dragon and a DOS utility allows all main DOS commands as well as files to be selected by cursor or mouse.

The Harris stand included disc software from Paramore and Grovers and orders were being taken for MacGowan programs (Printer Control and Dumper).

Next to Harris was the Pulser stand where Magbox, a very slick database for indexing articles letters and information from magazines was being demonstrated. Its powerful facilities were put to use on a file separately available from Pulser with the records of Dragon User articles dating back to issue one. (Incidentally that famous first issue was on sale for £0.50 on the Peasfoot stand).

Discomp, a very useful utility for just £1.99 which makes the disc more place out of the first graphic page and allows to load 1536 allowing almost all machine code programs to run with the DOS attached, was also available from Pulser.

Discomp will be incorporated into a new utility to be called HI-DOS which Brian O'Connor, of Pulser is confidently predicting will be the best DOS update yet including the latest patches, a faster stepping rate and a DOS written above the cartridge and to take also the RAM below.

HI-DOS was expected to be available from May onwards.

Other Pulser utilities include Copycat, a program to make disc to disc copying easier and Digger for exploring and altering/delting memory and on disc. It enables the moving, copying and repair of sections of disc as well as investigation of disc from other machines.

From Pulser I moved on to the Peasfoot stand where Harry Whitehouse reported that his company had just sold the last of its Dragon 64 keyboards which had been selling for £180. Supplies of the Supermoon replacement power supply at £180 are still plentiful, however Peasfoot is not, as its name may suggest, a sufficient company, but they do have stocks of more than 100 Dragon accessories from car stickers to T-shirts and dust covers to light pens, pencils and printers.

Future lines from Peasfoot will include new comms and modems packs and Harry is always hopeful of finding someone with new Dragon programs in search of a backer such as Peasfoot.

One of several familiar names missing from the show was Blaby Computer Games.



Two months before the show Blaby's Dragon list was taken over by H. & A. J. Preston of Mid Glamorgan. Happily although the company was missing, the full range of bargain-priced Blaby games were still on offer at the show under the Preston banner.

Another stall kept busy by the bargain hunters was Computex, a company with a massive range of Dragon titles at rock bottom prices.

As I talked with dealers at the show the comment made more than any other was what a friendly atmosphere it had. That was because it was held in the North where folk are more friendly anyway said potently beamed Rotherham's Harry Whitehouse of Peasfoot. Hugh Pearson, a partner of John Penn mentioned the kindness of the folk just made it seem kinder than the London 1986 show a month earlier. But that was no bad thing. It encouraged users and dealers to get together to talk about the Dragon in a way which didn't happen at the 1986 show, he said.

A great deal of talking was done around the OS-4 Users Group stand, which made a nice change for Martin Vernon, group chairman, and his fellow members at the Coast Group. The group, launched about 18 months ago, usually keeps contact with its 200 members in 22 counties through an electronic news and information disc. The disc has been published as far as Martin was pretty optimistic about the group's future as OS-4 continues to spread its user base across a wider range of computers now including Atari.

Dragon users who prefer their towns to non-electric, 100W-4-in-the-back-of-your-pocket form were introduced at another of the show stands to a new newsletter called News from the Dragon available for the cost of return postage from R.A. Read 21, Edgeworth Road, Fallowfield, Manchester M14 6PU.

By the end of the five-hour show more than 400 people had visited it and all the dealers I asked said they were satisfied with the day's business. But more than that, they also felt that the atmosphere had been special.

Hugh Pearson put it this way: "Last year the visitors decided that Coast had been the best place which we had been to because of the atmosphere. Those people who come here are interested in the Dragon and there are things for them to see and talk about as well as to buy, so it's a good day for everyone."

I can't quarrel with that. For user friendliness Coast certainly deserves the dragon rating.



# Three little words . . .

Roger Merrick looks over the Dragon *wp* package

HAVING established what sort of equipment is required, and what expectations you should have of that and the software in the first part of this article, I now have to look at three word-processing programs, and how well they meet the criteria that I have outlined.

The evaluation will assess not just the performance of the program but also the documentation.

## Minibest

I used *Minibest* by Microware successfully every day for about a year. It is still available and costs about £2. It offers a range of functions but suffers from the lack of an upper and lower case driver, and sophisticated printer handling.

As it was written in Basic, it was possible to outsize the program to my requirements. For example, I found that the black and green text display gave poor contrast on my monochrome monitor, so I made the program display in orange and black. I revised the cassette input/output from my working version as I always use disc. I added the ability to send control characters to the printer within the program, and changed the display of messages and requests for input and some of the default settings of parameters such as printed line length, and justification output.

However, unless you are a very slow keyboard user, you should not consider wordprocessors written in Basic (this is probably why while running a Basic word processor on page 42 — but it has a difference, did I? There is no way for Basic to attain the speed of key input that can be achieved by an experienced wordprocessor user. A Basic program imposes a limit on the speed of input, whereas a machine code program should never drop keypresses. You may start off slow, but as you gain experience, you increase in speed. *Minibest* attempts to overcome the problem by optionally toggling the speed-up poke, if the user's machine can accept it, it automatically restores normal speed for input/output operations.

The advantage a text-screen program should have over a program using a hi-res screen is to leave more memory for text. However, *Minibest* loses much of this advantage by being in Basic. Basic is not as memory efficient as machine code, but additionally, the user is stuck with the Basic operating system — 154 of valuable RAM is uselessly reserved by the computer for 'graphics' since Basic does not allow PCULARD. Then as the program is filled up with text, input speeds deteriorate as more and more time is spent clearing dead strings from memory.

*Minibest* typically allows up to 255 characters on a line.

The disadvantages of using the Dragon text screen in wordprocessing are: first the obvious one of reverse video for lower case, second, the small text window — it

adds to the difficulty of maintaining a line of thought through a piece when one can see only a tiny part of it at a time. Even a standard business screen of 80 by 24 characters is very little compared to a piece of A4 paper (which could be used for 80 by 60 characters).

The small text window makes proof-reading and editing more difficult. When I have completed the creation of a document, I flick through it on screen, correcting obvious errors, checking continuity and structure, and making any alterations that occur to me at the time. Then I make a draft print of the entire document, because, inevitably, further typographical errors and repetitive passages stand out, and other ways of seeing a work is, it is, I think, a general phenomenon that typographical errors are easier to detect on paper than on screen. Hence *Spelt* better programs.

Although it is a relatively straightforward matter to convert *Minibest* to run with a 16-bit character screen, the program's performance deteriorates markedly in the 16-bit drivers that I've used — Rainbow Writer, Edin- and Microware's own Real-It. In these, the additional processing time needed to put characters on the hi-res screen plus Microware's keyboard input routines make everything happen in slow motion. It hasn't tried it, but *Star-Graphic*, although only 42 columns wide, might be more successful, but my edition of that doesn't support the disc system, and I've been unable to obtain any help from the company (in these, Martin Microsystems, Knight Software).

*Minibest* has 30 'control key' functions, and the possibility to BREAK the program, execute (almost) any disc command and resume the program by a GOROT command without losing text in memory. In this way, the ability of *Minibest* to give the user access to the functions to the hardware is almost unlimited. For example, the program itself does not offer access to the disc directory, but the user can break the program, type DIR and then resume. Some of *Minibest*'s commands are quite unusual and make this a powerful package, worth considering despite its limitations.

- i) optional right justification,
- ii) ignores lines in alphabetical order according to user's specification (eg if you have a list of people's names with two initials followed by surnames, you can specify the alphabetical ordering starts at the beginning of the surname, not the beginning of the line,
- iii) decimal signs and total columns of figures,
- iv) sort lines in numeric order,
- v) add columns of numbers without decimal alignment.

*Minibest* stores text as standard data files. Basic programs saved to tape as ASCII can be loaded directly, loaded on,

reloaded to cassette, then CUGAded and run.

The commands are straightforward and easy to remember — B to backtab, C to centre, D to delete, and so on; the cursor is moved by the arrow keys.

*Minibest* is available for DragonDOS or PrimeDOS. This means that with a single 40-track drive, the user has the usual approx 180k of storage available per disc.

The program does not offer embedded codes, so it is not possible, for example, to print one word in a line in italics, or underline part of a word, or toggle a C symbol.

It is not possible to save your favoured default conditions other than by editing the program (24, if you know what to do). The program does not hold onto the filename, so you have to input it each time.

If you want to leave some blank lines, you can't just move the cursor down the screen or press ENTER a few times — you have to actually input at least one 'space' character and then ENTER to produce a blank line.

The 12 page manual supplied is poorly written and organized, but it does contain the necessary information. It lists and explains the syntax of the commands, and gives some ideas for using the program other than at night tea creation.

To get the system running you need to do the following:

- i) the program is supplied on cassette, so load it, as the necessary to the disc to load lines to get them installed correctly and save the program (as 'M') to save typing *MINIBEST* each time to disc. Make a backup of the disc.

ii) Printer.

- i) type RUN M (ENTER)
- ii) send a test print line with an underline on if required, toggle speed up poke if appropriate, load document 'name' if relevant.

- iii) create a default page.

## Stylograph

*Stylograph* by Viewmax is an altogether different package. It runs under OS-B, so you need a 16K machine, at least one drive, and the OS-B system. The *Stylo* package comes on disc and includes *Speltback* and *Maintenance* programs.

*Stylograph* uses OS-B, the 31 by 34 upper and lower case driver of OS-B. I find this is a most unattractive character set. It also presents black letters on a green background. With a monochrome monitor, this gives poor contrast. It is preferable to display to a monochrome monitor in black and buff. I have not found a way, in *Stylo*, of doing this. If you have a non-Epson printer, one that gives a linefeed with a carriage return, you will not be able to use *Stylo* directly with your printer because all the print will be double-spaced. It is possible to switch off linefeeds in OS-B, but this does

not work with Style (try it). The solution is either to buy another printer, or to put all your printed form Style through a RDU utility and the Mailmerge program. This works, but makes the implementation of writing a letter into a week's intensive computer science. You will also find that if your printer uses control codes above 100, Style won't send them. Whatever happened to device-independent IO?

As far as the Dragon is concerned, Style and OS-9 work despite the hardware, rather than take advantage of it.

Apart from the character set, which is Dragon/Gemini's fault, Style has an excellent method of displaying text. It translates nested list characters, the text scrolls off-screen to the right, and the user presses a single key to scroll to the other side of the page. This can be done for a number of pages. Creating forms, for example, is really easy with this 'what you see is what you get' approach.

There is an initially bewildering number of controls available. Key functions are a confusing combination of cue to function by key letter (control T = tab; escape 8 = time marked text) and cue to function by position (cursor movement is by keys I — up, J — left, L — right, K — down, R — move to left/right margin). Key/mouse have more than one function. Escape T is modified by 25 columns; control T is simple insert. In fact, you do get used to this quite quickly.

Although some of the 'normal' Dragon functions are available under OS-9 (by comparison, who would want them?), all the OS-9 functions can be accessed by the user from Style. The only limitation (only 1 is available) is memory. OS-9, as any rule is, is Very Powerful, and running it on a Dragon makes more sense of using the Space Shuttle on the 28.28 course. It has irrelevant functions, like multi-user capability.

The multi-tasking operating system means that only in exceptional circumstances will the input routine miss a keypress (if you try to type ahead during a disc access).

The user is protected from doing anything stupid and also from some sensible things, either by 'is the text secure?' or 'command not allowed with file open' messages.

The Style manual states that there is about 15K free for text after booting the system and loading the program. Using MPFREE from Style, shows about 10K free. Clearly, I can't tell some system modules to save ram — but which ones? The Style manual doesn't say which are required in memory or on disc.

To get up and running, you make a backup of the master disc. Then from the backup, you delete the Style/Exec directory, or transfer the Style/Exec directory to a system disc. You'll want to BOOT straight into Style, so this will mean writing a custom startup file and writing it to a base disc. To do this, you'll need to be confident about the OS-9 system confident enough to know what needs to be in memory or on disc for Style. Style expects system modules to be on drive 0 (more device-independent IO) so you need to either do a lot of disc swapping (easier said than done

in OS-9), or preferably, have two drives. Otherwise, a few small files will fill your disc.

Last year, I wanted to port one of my Video-Gemini running Model 1 Script (the standard system I never used), and out the Dragon's nose, with OS-9 and Style. After about six months of sweating with it, I really gave up the struggle. Actually I wasn't tired, I was bloody angry. There is no way that, when time is money, OS-9 can compete a system for a small business. If you are a computer enthusiast, I'm sure, like me, you will find OS-9 fascinating. But even once you've got the hang off its ferociously unfriendly protocols, the need to access a disc for virtually everything slows down operations enormously. Now if OS-9 was provided on ROMs which could replace the Basic ROMs, and the Dragon had, say, 256K of RAM that it could address continuously and then de-allocated 80 track drives, or a hard disc, and a decent 80-column monochrome display, well...

## Telewriter

Finally, Telewriter by Cognate probably doesn't need too much description, because it must be the single most popular Dragon and Disco wordprocessing program. However, until recently it did not support disc file handling. Microdeal have now rectified this.

The first point to note is that the 'blacked' light justify and keyboard enhance does not work in a straightforward way with this version. That is, I can't get it to work at all, but I'm not saying it might not be possible.

This is not too much of a problem as the keyboard response seems improved; the feature is — no right justification.

When you get the 'disc upgrade' you get a functioning version of Telewriter, but no 'Convert' program (it didn't work anyway) and... microdeal expect you to have the tape version which has the documentation. If you don't have the tape then go get the rest out of your program and system, you'll need to buy it, which takes the cost up to about £100 altogether, which is still reasonable.

After making a backup, you can BOOT straight into Telewriter. You have the option of buff or green background; red antialiased black background with buff or green text, but it's more choice than that. Then the different printer drivers can be selected from a menu — sensible. The program on power up gives about 15K for text generation. It's not a lot, but it's a lot. The program meticulously stores down its keyboard response when it is full but there is information on how to get round this in the manual, if you like it.

If you have a 512K expanded 32, the program does not make use of the upper 16K of the 160K Rainbow Writer drive.

Telewriter stores text on tape or disc in a non-ASCII format, so if you need to load your file into a program that offers some of the facilities, Telewriter does not offer (as alphabetically) then you need to use the 'utility' CONVERT. This, in versions I've seen, doesn't work properly. The idea was it imagine to cut down saving and loading

times (ASCII files take much longer to read and write from tape).

There are 25 key commands, a number of other commands available from various menus, and embedded normal and defined printer macro commands. These are especially useful, though it seems to me that some should be redundant, eg moving cursor back through text fast — shift back space — or else — back arrow, no shift, delete character at cursor break key delete character to left of cursor, clear key — key. After all, some major functions are missing — screen display of page breaks, overtyping, over defined tabulation, right justify (yes I know you can pay another £2 for it, if you use tape only, there are no facilities for spellchecking or mailmerging. Surely an opportunity here?

Defined printer characters cannot exceed 128, so if, for example, you've got a DMP110 (surely my mate isn't the only one?), you can't access the extended ASCII set to obtain a 14 sign.

The text display in my opinion is good — a readable character display.

The program protects the user from many mistakes, eg operations that clear memory ask you first. It is irritating that you need to specify disc IO for every input/output operation — if you forget, your document goes out to tape. This is time-consuming, but if you accidentally read in from tape you have to press reset to escape — that gives a hard reset, so you have to re-enter the lost text in memory. It is also irritating that you need to reconfigure the printer each time you print a new file. Not only can you not store your preferred values from the format menu, you have to keep inputting them while you are using the program. And, if you alter screen line width you alter printed line width (this is supposed to help you envisage what your text will look like).

The disc operations are stored in a 32 base file, so must inhibit text space and not work as efficiently as machine code. If you try to read in a non-existent or incompatible file, the filename you entered will be recorded as the file in memory, when it hasn't loaded. Why is that? The disc routine names all text files with extensions .TEX. The NULL routine only works for .TEX files, not .BAX files, so if you want to tell a .BAX file you have to RENAME it to something with a .TEX extension first. Why is that? (The answer actually appears the horrible prospect of losing the last three hours' work! etc)

DragonDOS cannot convert files above certain words. BAK, so if you try to update an existing file, the program returns with an error, leaving you to NULL the old file.

As they are in Basic, it seems it might be possible to amend the disc operations, but if I paid £2 for them, why should I have to?

Don't let this carrying me out sound distressed, I with the disc version of Telewriter had been available when the DOS was first issued. I with the tel character version was available for the Dragon, but I'm well pleased that at last we've got this much. I can't turn around a letter really quickly now; I'm planning to replace the Video-Gemini with a Dragon at work.

# Graphics screen wordprocessor

*Dr. Anthony Daniels uses the Dragon's graphics screens to simplify text handling*

HERE is a wordprocessor program which is, I believe, very different from the standard commercial formula. The text is posed into the graphics pages which means that it can be broken without loss of text. Therefore string manipulation to cope with, so saving on tape or disc is very simple. The Dragon display has never been very satisfactory for heading long lines, so no attempt is made to provide a visual display of the finished work. Instead CnPs codes are used to determine spacing, tabs, print characteristics, repeat characters and line lengths. Although this means you may have to make a few notes of how you wish the finished text to appear, complex columnisation becomes extremely simple.

The instructions are detailed but there are several extra points to be made. First of all, as the program is so long, I will be happy to send a copy to anyone who sends a stamped addressed envelope plus empty cassette, or a cheque for £20 to A. Daniels, 81 Barnfield Rd., Rye, East Sussex, TN37 6YU. Please say whether you require the Superdisk disc or tape version.

Secondly, the printed version is the Superdisk Disk version. Tape users should alter line 3080 to CHARM "TEXT", WORMIN and line 3020 to CLORDA "TEXT"; 0 and because of the DOS habit of starting the graphics pages at 3072 instead of 1536, they can only use 17 screen pages at best, although for those who send for the tape version all 20 pages will be available.

Thirdly, the printer control codes are for the Tandy DMP485 printer. Different printer owners will have to write their own version of lines 3090 and 3093 and adjust the control codes in Data line 3088. In line 3090 WJ creates the control code, WJ4 creates the screen information code and T1 creates the number of characters per line where relevant. (WJ4=1 is fundamental; users will also have to adjust all the PRINT 2 commands in lines 3170 to 3280).

Finally if you are unable to insert or delete a letter on the current screen when in Edit mode, make sure you have pressed 'O'. The program is actually very easy to use and most of the instructions are to cover the extensive editing facilities.

Saving data in graphics pages can be valuable in many types of program. Those of you who bought the original version of my music printing program will be interested to learn that I have reconstructed it on the same basis so that user mistakes can be readily corrected before printing.

So I hope you will find this program worthwhile both for typing and developing other applications. Just one word of warning. As it is all in basic there are several areas where mistakes may occur during operation, notably before saving and printing. This is just a check to make sure that all corrections are in memory. To start,

CLORDA type POLEARS and press ENTER, type RUN and press ENTER.

Of the initial commands only the print size must be specified, but you must also state the paper width if it is less than eight inches.

The margins are equal width on right and left. The secondary margin is explained later. The page numbering begins at 1 unless entered to the contrary.

The carriage return is automatic but may be forced by using the right hand arrow key. To save extra lines blank gives an extra press of the key for each line to be left.

To change to lower case or back to upper case press Clear. In lower case you can use the shift key as on a normal typewriter.

You may enter by backspacing, if the computer comes to an end of line marker, it will take some time to do some calculations before entering the marker so just pause for a moment.

To tabulate press <g>. A full explanation of tabulation is given below.

The EDIT at the bottom of the screen reads as follows (I to 7):

1 The number of spaces on the line using a particular print size or type.  
2 The number of spaces already used. (An ORANGE block indicates that the line is full.)

3 A letter indicating type size:

N = Normal, C = Condensed, AS = Smallset.

4 Line indicating type appearance:

B = BOLD, E = ELONGATED

(They cannot be used together)

5 L indicates underlining in progress. To alter any of the directives in 3,4 or 5 press the COMMAND ARROW key.

6 The page number. The pages change automatically when they are full, the last line of the previous page appearing at the very top of the new page.

7 The line number. This is incremented indefinitely but may be reset to 1 by forcing a carriage return and pressing '1'.

8 The sign <g> followed by a number gives the last used TAB position.

9 Z or z indicates upper or lower case mode.

## Tabulating

After pressing <g> you may tabulate in two ways. The letters of the alphabet are used to divide the line up into whatever fraction you specified at the beginning of the program. For example the default figure is 8, so the letters A to H divide the line up into ten 1's to 8 ninths (89 is obviously pointless) as measured from the left hand margin. Provided you use the same type size columnisation will be consistent but if you change the type size then my be small variations.

When writing letters etc. use <g>A to start a new paragraph.

Secondly you may use <g> followed by a number which will tabulate that number of spaces from your present position. This is useful for arranging an address in diagonal array where only one TAB is then required, but not good for columnisation. The computer recognises the figure code so if you are using a single figure enter it, for example 04 or 4.

If your TAB is wrong for the line or, in the case of the letters you have already passed it then nothing will happen.

Throughout the program when you try and do something impossible an orange block will appear at the bottom of the screen. Similarly if a further key press is expected the computer makes a beep. It also beeps at the end of each line to warn you to pause.

## The secondary left hand margin

When writing a play you may wish to use a secondary left hand margin to separate the dialogue from the name of the speaker. This is additional to the standard TAB positions, usually 8. (Using the standard settings, 8 will be 12). This is entered as follows:

NAME <g>H SPEECH... As long as the carriage return is not forced the secondary margin will be observed, but if the carriage return is forced only the primary margin will be observed (ie if you force a carriage return and still wish to observe a secondary margin you must press <g>8).

## Editor mode

Press ENTER to go to Editor mode. You may move the red cursor around with the arrow keys. To CHANGE a letter press C followed by the letter you require. To DELETE letters press D, wait for the beep and enter the number of letters you wish to delete (max. 9).

To INSERT letters press I, wait for the beep and enter the number of letters you wish to insert. You are limited here because you cannot insert more letters than there is room for in the line or on the page. However every page allows 8 spaces at the end which can be used for insertion in Editor mode. When the Editor mode is waiting for you to insert a letter the red cursor flashes more slowly. If you actually enter this intermediate mode by pressing C (by mistake) you can leave it by pressing ENTER again.

To return the current page to typing mode press CLEAR. It will be explained later how to return other pages to typing mode.

To review other pages you have typed press <+> or <->, thus adding or subtracting 1 to the current page. The current page can only be returned to typing mode when it is displayed, and if you have been editing











[illegible]



# Expert's Arcade Arena

(It there? Missed me?)

Several rumors have been circulated about my absence, and I can assure you that it has nothing to do with the fact that I spent time in action and tried to find out why Dave Hickman was so marked about one bad Fire Force review.

His argument, in fact the arguments of most of those guilty of releasing sub-standard games, is that the reviewers should support the software houses because we need them. For this reason, your intrepid journalist have not received copies of Superkid and have had to BUY THEM! Now, I don't mind a bad game or two, but take away a journalist's right to fig and things get a bit out of hand.

So, there was nothing for it — I told Quixoteam in no uncertain terms that the only way they could make up for this grievous lack of concern was to make sure the next game was a good one. And lo and behold Superkid is great! Don't say I haven't been doing anything for the last month.

To work then. The obligatory map this month is for AirCaf by Microdeal, and is drawn by Drew Smith and Karen Garcia. Thanks, and I think we can attain an important lesson from the map, namely "simplicity adds clear reading" or SACKR. The opposite of which is SACKRage, which really fits up the job and brings me on to M.R. Vine, whose very timeless obituary was published last month.

Well, he's not quite dead because he wrote me a particularly colorful letter this month, giving me the following poke for Microdeal's "excellent" letter's dream... I haven't seen a copy of this yet, so I can't comment on it, but for those who have got a copy read it as normal, press reset, and

then POKE 9560 with any number between one and ten to allow you to start on that respective level. Once 20155 is reset, and be named POKEng 9560 with more than 10 will crash the system. Also, the award for the prettiest letter sent to the Expert goes to M. R. Vine, with thanks for his regular correspondence.

Credit is hereby sent to Michael Edwards, who apparently discovered ARMPITS first, but I'll be doing justice the proper way, and that I will tell you in a minute. Apparently we printed ARMPITS the first time and also managed to print an R instead of an A in the Fire Force cheat.

Playing briefly to call Good Helen from Puffball a genius for not realising that I am both a Kill The Tingo and not the nicest of his letter assumes, I answer his question. No, I won't publish my hi scores, because a) very few people want to know them b) they will discourage everyone else c) I could be lying anyway.

Now then, turning to Frankie, for which I am about to publish the PROPER way to work out the ARMPITS code.

1. Turn on Frankie, and select Hacker's Delight.
2. Press ENTER.
3. The message "Half a Horse" will appear.
4. A horse is also known as a gee gee, so half a horse is a gee or G.
5. Select Hacker's Delight — press G.
6. A cursor appears.
7. Enter HELP.
8. The following will appear on the screen:

WAS IT A CAR OR A CAT I SAW

WAS IT A CAR OR A CAT I SAW

SPOT THE DIFFERENCES BETWEEN THESE TWO SENTENCES

Write to "The Expert" at Dragon User 13-13 Little Newport St, London WC2R 7PP, with all your arcade tips and hints.

AND HERE THE WORLD CONNECTING THEM

9. These sentences are exactly the same, but read the same way backwards as forwards, so that the second one is the first one backwards.
10. The word for sentences of this nature is Palindromes.
11. Select Hacker's Delight.
12. Type G.
13. Enter Palindromes.
14. The screen will say something like:

NOTHING IS THAT EASY.

15. It isn't that easy, it is obviously not that straightforward. Type BACKWARDS and it says "Correct". Now we are back on the right track.
16. Enter Hacker's Delight.
17. Type G.
18. Enter EMORONSLAP (which is PALINDROMES spelled BACKWARDS) — getting the hang of it?
19. The following problem presents itself:

FLICK	WRONG ONE
XRTUJ	WRONG ONE
ZULDSR	RIGHT ONE

20. Move all the letters in the RIGHT ONE one position to the right so that " becomes Z, Z becomes A, A becomes G, etc. and it spells out ARMPITS!
21. Enter Hacker's Delight.
22. Forget about G, just type-ARMPITS.

The clue for the second main codeword are a lot harder to get. A system will be rewarded with publication as soon as I arrives on my desk.

## The Answer

ANSWER: The number is 1939, and its square is 375921. Both numbers will fit in to the grid.

```

1939
  9
1939
 1
1939
 9
1939

```

Solution: The number, as it has a seven-digit square, must be in the range 1939 to 3162, so all possible values are tested using the POKE/EXT loop of line 10.

The square of the number is found in line 20.

In order to check that certain digits in each of the numbers match, it is necessary to convert both of these numeric variables to strings. Lines 30 to 50 do this.

Because the Dragon inserts a 'ghost' character in front of a string when using

the STR\$ command, this first character is removed using the MID\$ command at the end of lines 22 and 30.

This is Gordon Lee's own solution to the March competition — see page 30 for results.

It is then just a matter of comparing the digits which share a space on the grid to see that they do match in both strings.

```

10 FOR N=1000 TO 3162
20 NR=STR$(N):NR=MID$(NR,2)
30 S=N+NR:SR=STR$(S):SR=MID$(SR,2)
40 IF MID$(SR,1,1)=MID$(NR,3,1)
   AND MID$(SR,3,1)=MID$(NR,2,1)
   AND MID$(SR,5,1)=MID$(NR,4,1)
   AND MID$(SR,7,1)=MID$(NR,1,1)
   THEN PRINT NR;" ";SR
50 NEXT N

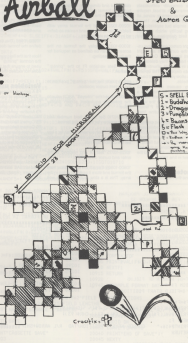
```

## Airball

by  
Drew Smith  
&  
Aaron Garcia



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- 5. = SPELL Book.
- 1. = Buckle up.
- 2. = Dreamer.
- 3. = Pumpkin.
- 4. = Beans.
- 5. = Flash.
- 6. = New Year, Winter.
- 7. = Endless snow.
- 8. = Oh, every body, together.
- 9. = Oh, the way, it is.

credit

# BOXING DATA

Mike Booker corners his data in a field and gets it in the box

SO often some computer enthusiasts designing systems which at best require menu-type data input screens or, worse, all input simply scrolls up the screen. Here I am presenting a simple but sophisticated screen formatting facility which displays data fields with field delimiters and field names.

The left and right cursor control keys (used alone) move the cursor left and right within the current input field. Combined with the shift key however they delete and insert characters in the field, shunting up the remaining data displayed. The up and down cursor keys allow you to tab and back-tab between the fields.

The enter key causes all the data displayed in the format to be moved to a holding array for subsequent data validation or filing. This subroutines is the *real* guts, being rather slow, and I would welcome a replaceable code routine from readers.

The listing supplied includes an example format for inputting names and addresses, and can be added unchanged to a filing program. Customisation of the format is done by changing the number of input fields in line 1000, the field definitions in the data statements in lines 10050—10080 and the format heading test in line 10080.

## Program notes

1000-1005 Define the number of field for

data input and dimension the array which holds the format parameters and the data extracted from the format.

10050-10080 Load the format array with field positions, lengths and names as defined in the data statements.

10090-10095 Display the format on the screen. H\$ can be defined as required for the format heading.

10480 Sets variable F1 to the "print" position.

10580-10585 Set the "print" position to the current cursor position.

10680 Convert the "inkeys" ASCII value to the possible equivalent screen display value.

10700-10710 Set up the field number and cursor position for input to the format.

10715-10720 Flash cursor and wait for a key to be pressed. The display statement is used to set the cursor flash rate.

10725-10775 Test for and respond to the enter and cursor control keys.

10800-10865 Extract the keyed data from the format and store it as ASCII string in the array. This is a slow routine, and the well

known 'gotaster' poke has been used to minimise the delay.

10900-10910 Places the data in the array back into the format for display and/or amendment routines.

10950-10960 The data statements which define the format design.

Note that the field start positions are held as the normal "print" values. Care must be used to ensure that the length of the fields does not exceed the last screen position.

## Variables used

F\$ A general string variable  
F# The number of input fields on the format.  
F1 The current cursor position.  
F2 A general variable.  
F3 Another general variable.  
F4 Latest "inkeys" value.  
F5 Current field number.  
F6 Current field length.  
F7 Cursor character.  
F8 Position of first character in current field.  
F9 Position of last character in current field.  
H\$ Test of format heading.

I am willing to supply copies of the program source with associated listings. Send an SAC and £3 to Mike Booker, 159 Graham Road, Staines, Middx. TW16 5AQ.

```

10000 'FORMAT CONTROL PROGRAM
10002 ' FOR THE INCOMM 32
10005 '*****
10010 'M.J.BOOKER: 1985
10015 '*****
10020 '
10025 SUBROUTINE10001 'SET UP ARRAY
10030 SUBROUTINE10002 'DISPLAY FORMAT
10035 SUBROUTINE10003 'ENTER DATA
10040 SUBROUTINE10004 'REPLACE DATA
10045 GOTO10005
10050 '
10055 '
10060 'SET UP ARRAY
10065 '*****
10070 F#:=WORKB OF F1016
10075 DIM F#(3*F)
10080 'FIELD START POSITIONS

10085 F#:=F#(2*F1)
10090 PRINTFVAL F#(F1)-(LEN(F#)-2*F#) "FORM# 911
10095 PRINTFVAL F#(F1) F#(F1+1) F#(F1+2) F#(F1+3) F#(F1+4) F#(F1+5) F#(F1+6) F#(F1+7) F#(F1+8) F#(F1+9) F#(F1+10) F#(F1+11) F#(F1+12) F#(F1+13) F#(F1+14) F#(F1+15) F#(F1+16) F#(F1+17) F#(F1+18) F#(F1+19) F#(F1+20) F#(F1+21) F#(F1+22) F#(F1+23) F#(F1+24) F#(F1+25) F#(F1+26) F#(F1+27) F#(F1+28) F#(F1+29) F#(F1+30) F#(F1+31) F#(F1+32) F#(F1+33) F#(F1+34) F#(F1+35) F#(F1+36) F#(F1+37) F#(F1+38) F#(F1+39) F#(F1+40) F#(F1+41) F#(F1+42) F#(F1+43) F#(F1+44) F#(F1+45) F#(F1+46) F#(F1+47) F#(F1+48) F#(F1+49) F#(F1+50) F#(F1+51) F#(F1+52) F#(F1+53) F#(F1+54) F#(F1+55) F#(F1+56) F#(F1+57) F#(F1+58) F#(F1+59) F#(F1+60) F#(F1+61) F#(F1+62) F#(F1+63) F#(F1+64) F#(F1+65) F#(F1+66) F#(F1+67) F#(F1+68) F#(F1+69) F#(F1+70) F#(F1+71) F#(F1+72) F#(F1+73) F#(F1+74) F#(F1+75) F#(F1+76) F#(F1+77) F#(F1+78) F#(F1+79) F#(F1+80) F#(F1+81) F#(F1+82) F#(F1+83) F#(F1+84) F#(F1+85) F#(F1+86) F#(F1+87) F#(F1+88) F#(F1+89) F#(F1+90) F#(F1+91) F#(F1+92) F#(F1+93) F#(F1+94) F#(F1+95) F#(F1+96) F#(F1+97) F#(F1+98) F#(F1+99) F#(F1+100) F#(F1+101) F#(F1+102) F#(F1+103) F#(F1+104) F#(F1+105) F#(F1+106) F#(F1+107) F#(F1+108) F#(F1+109) F#(F1+110) F#(F1+111) F#(F1+112) F#(F1+113) F#(F1+114) F#(F1+115) F#(F1+116) F#(F1+117) F#(F1+118) F#(F1+119) F#(F1+120) F#(F1+121) F#(F1+122) F#(F1+123) F#(F1+124) F#(F1+125) F#(F1+126) F#(F1+127) F#(F1+128) F#(F1+129) F#(F1+130) F#(F1+131) F#(F1+132) F#(F1+133) F#(F1+134) F#(F1+135) F#(F1+136) F#(F1+137) F#(F1+138) F#(F1+139) F#(F1+140) F#(F1+141) F#(F1+142) F#(F1+143) F#(F1+144) F#(F1+145) F#(F1+146) F#(F1+147) F#(F1+148) F#(F1+149) F#(F1+150) F#(F1+151) F#(F1+152) F#(F1+153) F#(F1+154) F#(F1+155) F#(F1+156) F#(F1+157) F#(F1+158) F#(F1+159) F#(F1+160) F#(F1+161) F#(F1+162) F#(F1+163) F#(F1+164) F#(F1+165) F#(F1+166) F#(F1+167) F#(F1+168) F#(F1+169) F#(F1+170) F#(F1+171) F#(F1+172) F#(F1+173) F#(F1+174) F#(F1+175) F#(F1+176) F#(F1+177) F#(F1+178) F#(F1+179) F#(F1+180) F#(F1+181) F#(F1+182) F#(F1+183) F#(F1+184) F#(F1+185) F#(F1+186) F#(F1+187) F#(F1+188) F#(F1+189) 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F#(F1+554) F#(F1+555) F#(F1+556) F#(F1+557) F#(F1+558) F#(F1+559) F#(F1+560) F#(F1+561) F#(F1+562) F#(F1+563) F#(F1+564) F#(F1+565) F#(F1+566) F#(F1+567) F#(F1+568) F#(F1+569) F#(F1+570) F#(F1+571) F#(F1+572) F#(F1+573) F#(F1+574) F#(F1+575) F#(F1+576) F#(F1+577) F#(F1+578) F#(F1+579) F#(F1+580) F#(F1+581) F#(F1+582) F#(F1+583) F#(F1+584) F#(F1+585) F#(F1+586) F#(F1+587) F#(F1+588) F#(F1+589) F#(F1+590) F#(F1+591) F#(F1+592) F#(F1+593) F#(F1+594) F#(F1+595) F#(F1+596) F#(F1+597) F#(F1+598) F#(F1+599) F#(F1+600) F#(F1+601) F#(F1+602) F#(F1+603) F#(F1+604) F#(F1+605) F#(F1+606) F#(F1+607) F#(F1+608) F#(F1+609) F#(F1+610) F#(F1+611) F#(F1+612) F#(F1+613) F#(F1+614) F#(F1+615) F#(F1+616) F#(F1+617) F#(F1+618) F#(F1+619) F#(F1+620) F#(F1+621) F#(F1+622) F#(F1+623) F#(F1+624) F#(F1+625) F#(F1+626) F#(F1+627) F#(F1+628) F#(F1+629) F#(F1+630) F#(F1+631) F#(F1+632) F#(F1+633) F#(F1+634) F#(F1+635) F#(F1+636) F#(F1+637) F#(F1+638) F#(F1+639) F#(F1+640) F#(F1+641) F#(F1+642) F#(F1+643) F#(F1+644) F#(F1+645) F#(F1+646) F#(F1+647) F#(F1+648) F#(F1+649) F#(F1+650) F#(F1+651) F#(F1+652) F#(F1+653) F#(F1+654) F#(F1+655) F#(F1+656) F#(F1+657) F#(F1+658) F#(F1+659) F#(F1+660) F#(F1+661) F#(F1+662) F#(F1+663) F#(F1+664) F#(F1+665) F#(F1+666) F#(F1+667) F#(F1+668) F#(F1+669) F#(F1+670) F#(F1+671) F#(F1+672) F#(F1+673) F#(F1+674) F#(F1+675) F#(F1+676) F#(F1+677) F#(F1+678) F#(F1+679) F#(F1+680) F#(F1+681) F#(F1+682) F#(F1+683) F#(F1+684) F#(F1+685) F#(F1+686) F#(F1+687) F#(F1+688) F#(F1+689) F#(F1+690) F#(F1+691) F#(F1+692) F#(F1+693) F#(F1+694) F#(F1+695) F#(F1+696) F#(F1+697) F#(F1+698) F#(F1+699) F#(F1+700) F#(F1+701) F#(F1+702) F#(F1+703) F#(F1+704) F#(F1+705) F#(F1+706) F#(F1+707) F#(F1+708) F#(F1+709) F#(F1+710) F#(F1+711) F#(F1+712) F#(F1+713) F#(F1+714) F#(F1+715) F#(F1+716) F#(F1+717) F#(F1+718) F#(F1+719) F#(F1+720) F#(F1+721) F#(F1+722) F#(F1+723) F#(F1+724) F#(F1+725) F#(F1+726) F#(F1+727) F#(F1+728) F#(F1+729) F#(F1+730) F#(F1+731) F#(F1+732) F#(F1+733) F#(F1+734) F#(F1+735) F#(F1+736) F#(F1+737) F#(F1+738) F#(F1+739) F#(F1+740) F#(F1+741) F#(F1+742) F#(F1+743) F#(F1+744) F#(F1+745) F#(F1+746) F#(F1+747) F#(F1+748) F#(F1+749) F#(F1+750) F#(F1+751) F#(F1+752) F#(F1+753) F#(F1+754) F#(F1+755) F#(F1+756) F#(F1+757) F#(F1+758) F#(F1+759) F#(F1+760) F#(F1+761) F#(F1+762) F#(F1+763) F#(F1+764) F#(F1+765) F#(F1+766) F#(F1+767) F#(F1+768) F#(F1+769) F#(F1+770) F#(F1+771) F#(F1+772) F#(F1+773) F#(F1+774) F#(F1+775) F#(F1+776) F#(F1+777) F#(F1+778) F#(F1+779) F#(F1+780) F#(F1+781) F#(F1+782) F#(F1+783) F#(F1+784) F#(F1+785) F#(F1+786) F#(F1+787) F#(F1+788) F#(F1+789) F#(F1+790) F#(F1+791) F#(F1+792) F#(F1+793) F#(F1+794) F#(F1+795) F#(F1+796) F#(F1+797) F#(F1+798) F#(F1+799) F#(F1+800) F#(F1+801) F#(F1+802) F#(F1+803) F#(F1+804) F#(F1+805) F#(F1+806) F#(F1+807) F#(F1+808) F#(F1+809) F#(F1+810) F#(F1+811) F#(F1+812) F#(F1+813) F#(F1+814) F#(F1+815) F#(F1+816) F#(F1+817) F#(F1+818) F#(F1+819) F#(F1+820) F#(F1+821) F#(F1+822) F#(F1+823) F#(F1+824) F#(F1+825) F#(F1+826) F#(F1+827) F#(F1+828) F#(F1+829) F#(F1+830) F#(F1+831) F#(F1+832) F#(F1+833) F#(F1+834) F#(F1+835) F#(F1+836) F#(F1+837) F#(F1+838) F#(F1+839) F#(F1+840) F#(F1+841) F#(F1+842) F#(F1+843) F#(F1+844) F#(F1+845) F#(F1+846) F#(F1+847) F#(F1+848) F#(F1+849) F#(F1+850) F#(F1+851) F#(F1+852) F#(F1+853) F#(F1+854) F#(F1+855) F#(F1+856) F#(F1+857) F#(F1+858) F#(F1+859) F#(F1+860) F#(F1+861) F#(F1+862) F#(F1+863) F#(F1+864) F#(F1+865) F#(F1+866) F#(F1+867) F#(F1+868) F#(F1+869) F#(F1+870) F#(F1+871) F#(F1+872) F#(F1+873) F#(F1+874) F#(F1+875) F#(F1+876) F#(F1+877) F#(F1+878) F#(F1+879) F#(F1+880) F#(F1+881) F#(F1+882) F#(F1+883) F#(F1+884) F#(F1+885) F#(F1+886) F#(F1+887) F#(F1+888) F#(F1+889) F#(F1+890) F#(F1+891) F#(F1+892) F#(F1+893) F#(F1+894) F#(F1+895) F#(F1+896) F#(F1+897) F#(F1+898) F#(F1+899) F#(F1+900) F#(F1+901) F#(F1+902) F#(F1+903) F#(F1+904) F#(F1+905) F#(F1+906) F#(F1+907) F#(F1+908) F#(F1+909) F#(F1+910) F#(F1+911) F#(F1+912) F#(F1+913) F#(F1+914) F#(F1+915) F#(F1+916) F#(F1+917) F#(F1+918) F#(F1+919) F#(F1+920) F#(F1+921) F#(F1+922) F#(F1+923) F#(F1+924) F#(F1+925) F#(F1+926) F#(F1+927) F#(F1+928) F#(F1+929) F#(F1+930) F#(F1+931) F#(F1+932) F#(F1+933) F#(F1+934) F#(F1+935) F#(F1+936) F#(F1+937) F#(F1+938) F#(F1+939) F#(F1+940) F#(F1+941) F#(F1+942) F#(F1+943) F#(F1+944) F#(F1+945) F#(F1+946) F#(F1+947) F#(F1+948) F#(F1+949) F#(F1+950) F#(F1+951) F#(F1+952) F#(F1+953) F#(F1+954) F#(F1+955) F#(F1+956) F#(F1+957) F#(F1+958) F#(F1+959) F#(F1+960) F#(F1+961) F#(F1+962) F#(F1+963) F#(F1+964) F#(F1+965) F#(F1+966) F#(F1+967) F#(F1+968) F#(F1+969) F#(F1+970) F#(F1+971) F#(F1+972) F#(F1+973) F#(F1+974) F#(F1+975) F#(F1+976) F#(F1+977) F#(F1+978) F#(F1+979) F#(F1+980) F#(F1+981) F#(F1+982) F#(F1+983) F#(F1+984) F#(F1+985) F#(F1+986) F#(F1+987) F#(F1+988) F#(F1+989) F#(F1+990) F#(F1+991) F#(F1+992) F#(F1+993) F#(F1+994) F#(F1+995) F#(F1+996) F#(F1+997) F#(F1+998) F#(F1+999) F#(F1+1000) F#(F1+1001) F#(F1+1002) F#(F1+1003) F#(F1+1004) F#(F1+1005) F#(F1+1006) F#(F1+1007) F#(F1+1008) F#(F1+1009) F#(F1+1010) F#(F1+1011) F#(F1+1012) F#(F1+1013) F#(F1+1014) F#(F1+1015) F#(F1+1016) F#(F1+1017) F#(F1+1018) F#(F1+1019) F#(F1+1020) F#(F1+1021) F#(F1+1022) F#(F1+1023) F#(F1+1024) F#(F1+1025) F#(F1+1026) F#(F1+1027) F#(F1+1028) F#(F1+1029) F#(F1+1030) F#(F1+1031) F#(F1+1032) F#(F1+1033) F#(F1+1034) F#(F1+1035) F#(F1+1036) F#(F1+1037) F#(F1+1038) F#(F1+1039) F#(F1+1040) F#(F1+1041) F#(F1+1042) F#(F1+1043) F#(
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[illegible]

# Winners and Losers

Every month, Gordon Lee will look at some prize programming points from a previous month's competition.

WHAT a disappointing response to the January competition! That is, as regards the number of entries received. No doubt the Christmas season had drained all remnants of creativity from many of our readers! I had also better offer the same excuse for having omitted the name of one of the prize-winners from the winners list for that competition (GL doesn't mind a slip now)—that was my fault — Ed.), as printed in the April edition. This was particularly unfortunate as the entry from D.J. Gray was one of the ones I had earmarked as being the most original. So my apologies to D.J. Gray.

So that readers can try out for themselves some of the listings submitted, I have reproduced a selection here. None of them is very long (one of the requirements of the competition), but they produce a variety of effects demonstrating just what can be done with the Dragon.

**Listing 1** is the aforementioned entry from D.J. Gray, which he calls a 'Dragon Curve'. I don't propose to give any further clues as to the design itself, but I can recommend that readers try it for themselves. You will certainly be surprised by the result — and I bet you'll fear the next time that you go writing code to produce the result by just examining the listing itself. Note that line 60 should be interpreted as it appears. That second equals sign and the 'not equals' sign are quite correct, as are the statements inside the brackets in lines 100 and 101. These are perfectly acceptable Basic statements which return a value of one if the condition is false, or minus one if it is true. This can be demonstrated by the following:

```
A=2: B=3: PRINT(A=A): PRINT(A=B)
```

**Listing 2** came from John Smalwood, and is called 'Gammarex', as it is based on the Greek letter, but reversed as a mirror image. This entry is quite spectacular to watch while the picture builds up.

**Listing 3** is one of the entries from the Gassmanix (or should it be Gassmanix?) of Marshall, Dorset. Well, whatever, David and Robert Gassmanix send in a couple of entries — this one simulating 'rays of light passing through a glass fibre whose refractive index varies along its length, or electrons wandering through a crystal in a crystal placed in the beam of an electron microscope'. So now you know!

If you like circles, why not try **Listing 4** from P.J. Taylor, or if you are more into Cubans, then **Listing 5** will probably appeal. Entirely 'Ripples on a Pond' (this title, so mine), it comes from Cheryl Goss of Barnaby on Thames.

Well, that ends the 'Win-Gaming' tonight! If I were the lucky I'd award the Gassmanix prize to the best one — (Ed.) but there are more circles, unfortunately, for my limited untitled. **Listing 6** is from Graham Barber, one of the competition page's stalwarts, and **Listing 7** is from Gai Bishop of BPOPO 83, a remote but sterling entrant.

I could finally mention that a number of entries have to be classified for either relying too heavily on the random function, or in

having every line and circle drawn at co-ordinates lying within the program itself, both of which were proscribed in the original competition! For instance, several entries were simply a random display of circles or squares producing a different display each time the program was run. Other entries relied on long sequences of GOTO lines containing the details of the pattern being built up.

(Your editor planned to enter tonight, just

forget the benefit of Les De Vito's criticism, however, a little meditation and experimentation will show that whereas I do a mean frenetic patch and can lay out any number of random patterns, I'm totally incompetent when it comes to generating anything original from a program. At last, as they say — back to the drawing board! A few other people must have come to a similar conclusion. And there were only trying to catch you all while you were off the chest to notice...)

```
Listing #1
10 DIM D(12):D=L0:Y=0:D=0
20 FOR C=0 TO 2:Y=C:Y=0:PRINT C
30 P=0:Q=1:SCREEN1,1:P=0:Q=0:Q=0,0
40 L=0:R=0:Y=0:Y=1:Y=1:PRINT:GOTO 50,100
50 FOR C=0 TO 20
60 D=D+D*(C+1)+D*(C+1)-D*(C+1)+D*(C+1)
70 NEXT C
80 D=D+D*(D+1)+D
90 D=D+D*(D+1)-D*(D+1)
100 Y=Y+D*(D+1)-D*(D+1)
110 L=L+D*(D+1):PRINT:D(12)=D(12)+D
120 FOR C=1 TO 8 STEP 2
130 IF D=C-1+D THEN C=C+1 ELSE D=C-1+D*(C+1)+D
140 NEXT C
150 IF D=C+D THEN D=D+D*(D+1)
160 GOTO 50
```

```
Listing #2
10 P=0:Q=1:SCREEN1,1
20 FOR A=1 TO 100
30 L=0:R=0:Y=0:Y=0:P=0
40 L=0:R=0:Y=0:Y=0:P=0
50 L=0:R=0:Y=0:Y=0:P=0
60 L=0:R=0:Y=0:Y=0:P=0
70 L=0:R=0:Y=0:Y=0:P=0
80 L=0:R=0:Y=0:Y=0:P=0
90 L=0:R=0:Y=0:Y=0:P=0
100 L=0:R=0:Y=0:Y=0:P=0
110 L=0:R=0:Y=0:Y=0:P=0
120 L=0:R=0:Y=0:Y=0:P=0
```

```
Listing #4
10 P=0:Q=1:SCREEN1,1
20 M=0:R=0:Y=0:Y=0
30 FOR C=0 TO 20 STEP 2
40 C=0:R=0:Y=0
50 L=0:R=0:Y=0:Y=0:P=0
60 L=0:R=0:Y=0:Y=0:P=0
70 L=0:R=0:Y=0:Y=0:P=0
80 L=0:R=0:Y=0:Y=0:P=0
90 L=0:R=0:Y=0:Y=0:P=0
100 NEXT L
110 GOTO 10
```

```
Listing #6
10 P=0:Q=1:SCREEN1,1:P=0:Q=0:Q=0,0
20 FOR C=0 TO 20 STEP 2
30 FOR A=0 TO 20 STEP 1
40 C=0:R=0:Y=0:Y=0:P=0
50 P=0:Q=0:Y=0:Y=0:P=0
60 P=0:Q=0:Y=0:Y=0:P=0
70 P=0:Q=0:Y=0:Y=0:P=0
80 GOTO 20
```

```
Listing #3
10 P=0:Q=1:SCREEN1,1:P=0:Q=0:Q=0,0
20 L=0:R=0:Y=0:Y=0:P=0
30 P=0:Q=0:Y=0:Y=0:P=0
40 FOR C=0 TO 20 STEP 2
50 P=0:Q=0:Y=0:Y=0:P=0
60 P=0:Q=0:Y=0:Y=0:P=0
70 P=0:Q=0:Y=0:Y=0:P=0
80 P=0:Q=0:Y=0:Y=0:P=0
90 P=0:Q=0:Y=0:Y=0:P=0
100 GOTO 100
```

```
Listing #5
10 P=0:Q=1:SCREEN1,1:P=0:Q=0:Q=0,0
20 M=0:R=0:Y=0:Y=0
30 FOR C=0 TO 20 STEP 2
40 FOR A=0 TO 20 STEP 1
50 C=0:R=0:Y=0:Y=0:P=0
60 L=0:R=0:Y=0:Y=0:P=0
70 P=0:Q=0:Y=0:Y=0:P=0
80 P=0:Q=0:Y=0:Y=0:P=0
90 GOTO 20
100 P=0:Q=0:Y=0:Y=0:P=0
```

```
Listing #7
10 R=1
20 P=0:Q=1:SCREEN1,1:P=0:Q=0:Q=0,0
30 FOR C=0 TO 20 STEP 2
40 FOR A=0 TO 20 STEP 1
50 C=0:R=0:Y=0:Y=0:P=0
60 P=0:Q=0:Y=0:Y=0:P=0
70 P=0:Q=0:Y=0:Y=0:P=0
80 P=0:Q=0:Y=0:Y=0:P=0
90 GOTO 20
```

If any reader does have serious delivery/non-delivery problems with any supplier, whether or not they advertise in DU, we would like to know. Only rarely can we do anything to improve a genuinely dodgy situation (which fortunately are rare) but it helps us to build up a profile and identify any long-term problems. Come to think of it, that includes Dragon User, as, naturally, we want to know about any bottle-necks as early as possible. Apologies in advance for not acknowledging every letter, but where we can be of practical help, we will.

## Communication

**Problems** I have been living in West Germany and have recently returned to the UK. Although I have contacts in Germany I am starting to make new contacts here in Britain and would like to hear from anybody who is interested in swapping tips, games etc.  
**Name:** Rick Hyde  
**Address:** 16 Walsley Avenue, Poolscarle-Fyfe, Nr Blackpool, Lancashire FY9 3JJ.

**Problems** In the December 1984 edition of Dragon User there was a program called *Snakes alive* by Andrew Wood. Snak-data lines are unreliable, they are data lines 1250 and 1260, in the lines beginning with 1000 and 1040, is there anybody who has the correct lines or knows where Andrew Wood is?  
**Name:** Stephen Sewart  
**Address:** 16 Apple Place, Aberfeldy, Perthshire PH15 2AH

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1984-1

# Write: ADVENTURE

Peter Gerrard just parsed this way

LAST month we looked at the non-computer side of writing adventure games, the setting up of the game world and so on, providing a realistic atmosphere for the players to try and make them believe that the really is taking part in a real situation. Well, almost real anyway. Hopefully by now you have most of the game area mapped out, and have been able to work out some kind of vocabulary list for the game. Although we'll be looking at that in much more detail in another article, it would be helpful both in this and next month's articles if you could have some sort of rough idea of the syntax of words you're using. Most adventures understand a common series of words, such as INVENTORY, SCORE, HELP, QUIT, OPEN, CLOSE, SAVE, RESTORE and so on, so if you can build up from that we'll be able to get started.

## Parsers

First of all, what is a parser, and how will it help us in writing our adventure game? Well, arguably the most important part of any adventure game is the link between the player and the program itself. That is, the part of the program that allows the player to type something in, and which analyses that something. This we refer to as a parser, a means by which we can break down a sentence into its key components, and then be able to act on those components. For our purposes, a sentence can be looked at as consisting of a VERB, a NOUN, a LINK word and an ACTION word. An example should serve to explain.

Suppose the player types in "PUT THE KEY ON THE TABLE". This we want to be able to break down into the following pieces:

```
VERB: PUT  
LINK: KEY  
ACTION: ON  
NOUN: TABLE
```

We mentioned earlier that you will need a vocabulary list for your adventure. Assuming that we have this list, the verb PUT might be the thirty-first item in that list. Thus we need to be able to come out of our parser with a value of 31 if the word PUT is indeed the verb. Similarly for link, action and noun, we'll need to have a series of values that the program can operate on. In this case, KEY might be the second word in our list of link words, ON the fourth action word, and TABLE the twentieth noun. So we could end up with something like:

```
VB=31  
LW=4  
AC=4  
NC=20
```

I think you can see where the four variable names have come from! Obviously, they are VERB, LINK, ACTION, and NOUN, and having got these four values we can go on to another part of the program and act accordingly. You'll note that the occurrence of the word "THE" in our player's inputs is discarded: this is almost irrelevant! As, so that a player might type in "PUT THE KEY ON A TABLE", but as far as the program is concerned this is immediately reduced to "PUT KEY ON TABLE". Eliminating any other words might cause problems, so we simply remove "THE" and "A".

However, we cannot change in and write a parser on the assumption that the player will always type in a sentence that consists of VERB, LINK, ACTION, NOUN. They might just enter OPEN DOOR, or even INVENTORY, so the program will have to be written with that in mind. If the player tries to type in anything more complicated, then regrettably it will not be understood. But, if a problem cannot be solved by our VERB etc. approach, then it is probably too complicated anyway and should be discarded.

The very first adventure games understood nothing more complicated than a VERB... NOUN approach, so for the moment we'll content ourselves with building up a simple parser that understands just that. This in itself should enable you to write a more complicated parser for yourself, but in case you can't figure it out we'll be looking at the full version in next month's article, as well as considering the problem of text compression. That is, how to get a quart of text into a pint pot of memory. That, however, will have to wait.

## Inputting information

In order for the program to have a sentence to work on and unravel, there needs to be (just a little!) routine that allows the player to type something in. You're probably well aware of the Dragon's own INPUT statement, but that is not sufficient for our needs. A well-developed adventure game needs a routine that cannot be easily broken out of, and moreover one that does not allow the player to move the cursor around the screen and thus damage our wonderful screen layout. Professional programs don't allow you to do things like that, and neither will we.

The following program will allow the player to type in his sentence, and return control to the main part of the program with the sentence happily stored in

the string GMS. This we can then get to work on and start analysing.

```
60000 GMS=""  
60001 PRINT "" : GOTO 60001  
60004 Z0=INKEY$ IF Z0="" THEN 60004  
60010 Z=ASC(Z0) IF Z<65 OR Z>90 AND Z<105 AND Z>130 AND Z<161 AND Z>166 AND Z<191 AND Z>196  
60015 ZL=LEN(GMS):FZL=ZL+1  
60016  
60018 IF Z=chr(10) THEN GMS=GMS+Z:  
PRINT Z: GOTO 60000  
60019 IF Z=chr(13) THEN PRINT  
"" : RETURN  
60020 IF Z=chr(8) THEN GMS=LEFT$(GMS,ZL-1):PRINT Z:  
GOTO 60000
```

A few brief words of explanation. Line 60004 waits for a key to be pressed, while line 60010 checks to see that it falls within a given range. In this case, it has got to be a letter of the alphabet, the space bar, a carriage return or the delete key. Anything else is ignored. Line 60015 states the length of our input string GMS, and checks to see if it's greater than 191 characters. If it is, then go to line 60016 because we don't want to add to it. Line 60018 adds whatever was pressed to our input string, provided it isn't either the delete key or the carriage return. Lines 60019 and 60020 take care of those possibilities, assuming that at least one character is contained in the input string. Everything else is just ignored and looped up by line 60020.

How would we go about using this subroutine? Well, like this perhaps:



```

300 PRINTPRINT "WHAT NOW?":
GOSUB 60000:PRINT
302 N05="":V05="":V0=0:N0=0
304 LC=LEN(CMS):FOR I=TO LC
  IF MID(CMS,I,1) = "T" THEN NCM0=
  LEFT(CMS,I+1):MID(CM,I+1)
306 NEXT I:FOR I=TO LC
  IF MID(CMS,I,1) = "A" THEN NCM0=
  LEFT(CMS,I+1):MID(CM,I+1)
308 NEXT I:FOR I=TO LC
  IF MID(CMS,I,1) = "O" THEN NCM0=V05+
  MID(CMS,I+1):MID(CM,I+1)
310 V0=V05:N0=LEFT(V05,LEN FOR)=
  TCM:IF V05=V0 THEN N0=0
312 N042
308 NEXT I
400 V0=1:N0=0:GOTO 400
402 IF LEN(V0)=1 THEN
  LEN(CMS):THEN N0=0:RETURN
404 N05=RIGHT(CMS,LEN(CMS)-LEN
  (V0))
406 H0=H0+N0:N0=LEFT(H0,LEN
  (H0))
408 FOR I=TO LEN(H0):N05=
  MID(H0,I,1):IF N05="T" THEN
  N0=0:RETURN
410 N0=0:RETURN
412 N0=0:RETURN

```

Again, a few brief words of explanation are called for. You note that in line 308 we call up our input subroutine, and return from that with the string CMS containing the sentence typed in by the player. The next few lines weed out occurrences of the words "THE" and "A" before line 306 checks for the first occurrence of the space. Having found, then, VER0 is assumed to be the word to the left



of the space, and the NCM0 is assumed to be the word to the right of the space. Then, the string NCM0 is assigned to the verb and VER0 is assigned to the noun.

Two variables need explaining. NCM0 contains the number of verbs, and LEN the number of nouns, in certain words. The arrays VER0 and NCM0 contain all the verbs and nouns that the program understands, so if a player typed in "OPEN THE DOOR", and OPEN was the fourth verb and DOOR the seventh noun, then VER0(4) would equal "OPEN" and NCM0(7) would equal "DOOR". In this example, the program would return with the value of 4 stored in the variable V0 and the value of 7 in the variable N0.

Fairly obvious checks are included in the program in case words are typed in but not recognized. Finally, if the verb is not understood the variable H0 is assigned the value of one, which in the adventure will be interpreted as to the word "GO". This allows the player to type in NORTH and the program

will take that to mean GO NORTH. If a player types in DOOR, it will assume this to mean GO DOOR. On the other hand, if a player types in TOILET it will assume a meaning of GO TOILET, which might not necessarily be what the player wants to do. You can't win them all.

## Conclusion

This is a fairly simple parser, in that it only allows us to understand straightforward VERB ... NOUN sentences, although the player can obviously type in something much more complex. By looking at the way it's been built up, perhaps you'd like to take a stab at writing a rudimentary handler for more complicated sentences, as in our VERBS, LINK, ACTIONS, NOUN examples. It's more tedious than it is complicated, so dust off the old grey matter and have a go. If you can't believe it or, don't worry, because we'll be taking a look at the complete parser next month.

One final problem to ponder on, like said that we'd be looking at text compression as well, trying to fit as much text as possible into as small an amount of memory as possible. Knowing that it takes one byte of memory to store one character, how do you think we might go about doing that? As a clue we'll be looking at lots of bytes, and you don't understand how they work then back to the reference books, but if you can wait till next month, then all will be revealed.

Happy adventuring!



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**MENTIONED** At the end of last month's column that I'd be looking at a number of adventures aimed at boys and intrigued readers, I wrote, "Whether Douglas Christie gets busier with the advent of *Singing in the Rain* or not, I just don't believe he should admit that the sight of his agepeersman sailing away northward is a large indication of your better-adventurer boy's heart [and not through feeling sorry for him, actually], so once more as revert to queries, films and music, and new games must wait for another month. Sorry chaps. I jinxed it and I go to one of England's oldest games before resuming those home-produced adventures, but will wish Mike Gearing and the lads all the best anyway."

Flight, over to business, and a look at some maps first of all. Personally I think that maps are only really useful if they're not one to one scale, but in the world of adventures I'm quite happy to think differently. Spygy has probably promoted more queries than any other Dragon adventure, and it has also prompted more than one map to find its way to other Gernard. So apologies to Paul Lindqvist for not using his map, but we'll be coming back to his later on.

Tim Fetherstone has obviously been a busy chap, and the master of Sycorax and the temple of rain were produced by him. They should help anyone who's busy stumbling around in those two games. He has also produced a fateful of hints for anyone just beginning to find their way in "Janglewood," and so... to get rid of the Sycorax, you should YOGA! WOMAN! to raise the magic carpet Goliath seeds the flower from the birds' nest in the woods. Hearing can get into the walled garden so the flowers, cactuses can be found in a river, enter Cassie Schwartz. Finally, should THURSDAY GOD the after dark before entering, and to stop the door to the walled garden from closing HUMAN, a THIRTY TIGER, by the way, Tim, the Expert can't read. Arthur Russell. I hope

1144

Back to the aforementioned Paul Leardini. Hopefully that's the last time I'll be writing his complete name! New young Paul needs help on about five million Dragon adventures, but coming from St. Helena that's not very surprising really. After all, how did they fare against rooks?

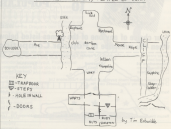
playing neighbours Wigor on Grand Friday? Very badly, let me tell you. First the good news, he can help people on Twitter, Synergy and Lost in Space, and will send info to anyone who sends him a SAC and 30 pieces for photocopying (those are these colour sheets). Next for the bad news, he is stuck in London, at El Diabolo, Jerusalem Adventure 2, Willam's Day Adventure 3 and Ultimate Adventure 4. And that was just in his second year! The first are also mentioned: Jackpot, Paradise, Nerd, Blind Justice, Kingdom etc. etc. etc. If anyone else is helping, please, his address is 42 Salford Avenue, Plan, St. Helens, Merseyside W10 2BC. He even begs me to print his telephone number, which is St. Helens 878227. Although he moans about not being able to complete various games, he does offer an interesting hint on Synergy: How do you get across the pit? You can't cross the pit. This is the start, this is what they want. He does mention, however, that you can escape from the endless twisting passage it, and only if, you have the communicator and can TTSU. If you haven't got it, then you can forget all hope of ever escaping. So, if you want help or want to

offer help, then write to the lead. I won't be. Since he broke the golden rule and did not include an ERM board, I'll not.

Upon clicking the proof link, a letter by one Steve Davis is read. Sadly, Steve's letter does not seem to have made it to the fax machine and is consequently "Postmarked" (includes "Appointed" above every few minutes) a constant "out of order" message. The fax machine is displaying with the title page "Letter to America's" now that I have this in hand, so he says, and also that Clinton "is" to become this authoritarian President across a problem like that with the Clinton incident, and would suggest that Steve send his tape back to California with demand for a new copy that, hopefully, doesn't last over five minutes. Which is what you should all do with a faxing tape, and so I hang in with accompanying letter (with postage) in a reasonably timely one that is a new tape should soon be sent.

More offers of help from the public: R. Clemenson, 4 Wharfedale Tower, Motherwell ML1 1UG. Maps and solutions to Ring of Delnawar, Mension, Ardenham, via Ranshup, Seale/Cro, Black Sarcum, Calverland, Renshaw's Dene, 100000.

THE NET TALENT/TEAM OF WORK



Jean Star and Franklin's Bomb can all be yours for the price of an S&E. He is, however, stuck on Earth in Space, having problems with coloured discs and cylin-drocoaxes. This seems like a reasonable time to give you the solution (well, most of it) to *Lost in Space*, courtesy of young Michael Edwards. No backward writing this time, it's too long, so here goes...

1) The most important thing to do first is to gain protection from the robots. Go to level four and play LIGHT to get some light. Find the credit card (north of city) then play the video game until something drops out. This is a ring, and will offer protection against robots.

2) Take the white disc (south of city) then go to level 2. Go to the food machine and insert the white disc. Take and eat this pie to get a blue disc.

3) Go to level 5. Go E, N, then sit. They wave blue disc. Go N, DOWN then press the button. Go to level 3. Go E, N, E from the sit. Pull the lever. Go to level 5. Go E, N, DOWN, SLIP to find the red disc. Go to level 2. Go E, E from sit. Wave the red disc then open the box with the ring to get the black disc.

4) Go to level 3. Go E, E and wave the black disc. Go E, DOWN then press the button.

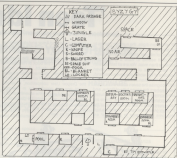
5) The solution is... FRANKLIN...

Hint: the sound rooms with grilles in the walls are lifts. To operate them type SUR (plus a number). For example, SUR 000...

So let's have no more queries about *Lost in Space*, shall? Continuing with Mr. Clemenson, he addresses a problem with a lot of people's concerns regarding *Star Trek*. It would appear that the company involved in producing this, *Scopex Perma*, have suffered a disaster and can't themselves anymore no longer in business. Has anyone completely finished this game? I'd love to hear from you if you have. Perma? I give up on...

Thanks to either *Star Trek*, *Star Trek*, for sending me the largest S&E in the world. Help stand for *Star Trek*? No problem. Leaping around the country we touch down next on Cornell. *Hi Woodland view, Laurel, Bedwin, Cornell FL30 SH2* to be able, home of Bob Clemenson. He can offer help on Franklin's Bomb, *Lost in Space*, *Professor and Horace Factor*. Also, he is stuck on 12th floor and *Clawson of Diner*, which is rapidly becoming a theme in the *Dragon* page. Having found some dynamite to hang onto further, so I thought that you *REDUCED ENT RECOMITRY AND CROSTUR*. This will block the river and let you up the shaft, leading to yet more problems. Your problems, however, not mine!

Groveler of the month is Gary "helpful" Tompkins, who, even though he was writing to that other *Dragon* shop, starts his letter Dear Sir (then, begs for help, thinks that *Dragon* User is stupid, and thanks everyone in the world in space for their continuing support. How can anyone ignore such a plea? Quite easily really, but no. Poor chap is stuck on the *Horace Factor* (help sheet should be received by now), and *Apocryph* 477, so with any luck he'll have read last month's column and got himself sorted out. He also wants to know who killed *Hiary 54*. It bothers me not a jot.



As long as you've received his message, which reads:

"To save the director, you must:

1) Make a radiation vaccine (radiation and seaweed)

2) Fix the reactor (put the vaccine, use the module)

3) Press the button."

or something like that, anyway. Once the message is passed on. *Hiary 14* can quite happily be melted down and sent to join all the other dead bodies but must be plugging somewhere. Little may be probably taking to some of *Star Trek*'s creations at this very moment.

Stuart Thell has a few hints for *The Keys of the Wizard*, namely that to get the scroll you need the rope, and to get the *displacement* you need the buttons. Little-fanally I read page two of his letter too, and thought that the sentence "If you use you die as normal" was a bit harsh, really. However, soon realised that this was the letter half of a sentence which started "If you want to, you can release *Vader* for a practice battle, but" and on to what I'd

already read. A little hint-ette for *Synate* leaks out there. Also *Hi: Cass* can't get started on *Party Business*, so might I suggest *Salomander's* hint to you, which reads: "everything around here starts unpleasant, which is all right if you don't mind looking like a prunk. Don't go too far from the island." There, that should get you going, as they say.

These *Dragon* Magazine people are desperate. Sending free copies, offers of help on *ARM* adventures, something must be about. Andrew Hill, at 13 *Perry Jones Close, Maine, Gwent NP23 5BH* is the contact man, and the latest issue is not bad at all. Lots of hints and tips for *Dragon* adventure players, so it's worth writing off for more information. However, who do they come from? They want the complete solution to *El Diablo*? Yours truly, of course, and anyone else wants a copy of that then send in an S&E to the adventure trail, via *Dragon* User of course, and you'll receive one.

That's it for this month. Now then, where are those adventures for review...

## Adventure Contact

To help puzzled adventures further, we are instituting an Adventure Helpline - simply fill in the coupon below, stating the names of the adventures, your problem, and your name and address, and send it to *Dragon* User Adventure Helpline.

1293 Little Newport Street, London W20H 7PP. As soon as enough details have arrived, we will start printing them in the magazine.

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# 'Teen Idol

Seventeen, where have you been? says Gordon Lee

Of all the ten digits, the number 7 tends to be blessed with a greater than average amount of interest, and in everyday usage, the digit seems to have a greater prominence than most. We are all familiar with the seven days of the week, the seven wonders of the world, the seven seas and, possibly, the seven deadly sins! Musicians will recognise the seven notes of the scale, geographers the seven hills of Rome, and astronomers the 'Seven Sisters', a cluster of stars known as the Pleiades. There are also seven stars in the constellation of the 'Plough' (and in the royal banner of the high kingdoms of Sweden, of Sicily, that are

called *Gordin and Amos*, and also there's a job of that name in *Barling*, just off the *York Lane* — D.J.).

Biblically, references to the number seven abound, in the book of *Revelations* in particular. No doubt, if your lucky number is seven, you may stand a better than average chance of winning a prize in the *Dragon Star* competition, in which event you will possibly be in 'seventh heaven', and if you are the seventh son of a seventh son, you might be particularly lucky. In this age of the sex discrimination act, I would expect this to apply to daughters as well!

Mathematically, the number seven has a number of interesting points. For example, the reciprocal of 7 (0.142857...) consists of an endless repeating cycle of 6 digits '142857'. Moreover, the decimal expressions of 2/7, 3/7, and so on also comprise the same order of digits, though beginning at a different point in the cycle:

1/7 = 0.142857142857...

2/7 = 0.285714285714...

3/7 = 0.428571428571...

and so on.

Other numbers which possess this property include 17, 19, 23, 29, 47, 59, 67 and 83. In fact, these are the only numbers less than 100 in which the number of digits in the repeating cycle is one less than the number itself. Thus, there is a cycle of 96 digits in the decimal of 197. Other larger numbers of this type include 1581, 7699 and 17385.

Seven is also the only digit for which there is not an easy test for divisibility. For example, we can say that any number, however large, is exactly divisible by 2 if the last digit is even. We don't need to work it out, we just know that the division is exact. All multiples of 5 must end in either a 5 or a zero. Similarly, if the digital root of a number is divisible by 3, then the number itself will be divisible by 3. These simple rules are sometimes useful to establish divisibility without having to bother to actually work out the actual sum.

Unfortunately, there is no simple test for establishing multiples of seven. This is not to say that tests do not exist, but these are quite complex, and often a trial division would be just as simple.

## The Competition

The competition this month is related to numbers that possess multiples of seventeen (not seven!). Write down any three digit number, for example, 520. Now add a fourth digit to the right-hand side such that the resulting four-digit number is a multiple of seventeen. In this case, we must write in a 5, to produce 5205. Now take the last three digits of this new number and repeat the operation. So the sequence would be:

5205  
2057  
0578  
5789  
7893  
8939

On reaching 803, it will be found impossible to add a single digit (0 to 9) to make a multiple of seventeen, so the series would end after five numbers.

What three-digit number (or numbers) should you start with in order to produce the longest sentence?



## Prize

SEVENTEEN. It has sometimes been said, 'is the nearest thing to decimal integers is a half-random number. Among stable entities it is the least stable, among definable quantities it is the least defined. To control minds it may merely be the number position greater than sixteen and smaller than eighteen, but those with more highly refined sensibilities can detect a subtle, almost mystic quality in the frequency with which SEVENTEEN appears where any other number would do as well. In competitions like this, for example:

In keeping with the mysterious mood of our puzzle, this month's prize **IS NOT GOING TO BE REVEALED!** But you can bet your life that it will be something worth having, there will be twenty of it at least, and I think I can guarantee that it won't be a copy of either *Double Cross* or *Mean Crime*!

## Rules

As soon as your digits are defined, clump a packet of your program to envelope (no cassette, please) with any footnotes you want to include, not to mention your name and address, label the envelope **JUNE COMPETITION** and direct it to us at the usual address.

Finally, (and, before posting) complete this sentence: 'There was the day, 19th, when I was seventeen, ...'. Those who seventeen will just have to invent something like everybody else. Anything really ungrateful will be discarded, so that it won't even touch the ground. Happy inventing.

## March winners

Asaph, Unsworth, Bash, Plaything. Someone help me out from under this pile of paper, for photo's sake.

Thanks, Pete, I think we can reasonably say that we had one or two entries for the **MARCH** competition. Appropriately enough for an avalanche, the prize is, *Microcal a Stone Reader*, another recently successful crossworders are Matthew Diamond of Leeds, J.F. Singleton of Doncaster (are you serious, JPT?), Barry Caruth of Bangor, G.A. Hummel of Gainsborough, P. Woodson of Wotton-under-Edge, Anthony Clarke of Wymal, Graham Barber of Carlton Colfield, Simon Greenwood of Ingatestone, Anthony Hopkins of Orfild, James Bonfield of Sandy Heath (it says here), Robert Tuck of Chappenhall, Pat Dahl of Norway, Paul Priestland of Lechlade, John Smallwood of Preston, David Peto, Malyd of Marnet, P.G. Haselwood of Lifford, C. Robertson of Epsom, Matthew Lodge of Chesham, Rupert Shiers of Finton and G.A. Fry of West Wiltshire.

Difficult one, this. There were miles of programs and piles of good letters. Best honourable mentions to D.H. Barker for 'Gems and stones will break my bones, but jewel have to catch me first' and to Anthony Clarke for 'Gems and stones may break my bones, but fangs, poles and bytes will never harm me'.

## Solution

See page 23.

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Extensions to BASIC 42 include change cursor direction, scroll disable, pause listing, BREAK disable, improved FROM (allows single stepping), Detailed help and error messages.

**SPOOL UTILITY** £5.00  
Use computer while printing. 30K print buffer. TYPSET program turns Dragon into typewriter.

## NEW FOR '87:

**ICONS UTILITY** £5.00  
Put icons in your program! Controlled by cursor or "mouse". Commands to define, clear, load and save icon positions and windows.

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Another fast! Structural BASIC on the Dragon! Allows named procedures, improved loop controls by WHILE ... DO and REPEAT ... UNTIL, etc.

**DOS UTILITY** £5.00  
Make friends with your DOS! Enter all the main DOS commands, plus LIST, EDIT etc. and select files by cursor or "mouse".

## WHAT THEY SAY ABOUT BASIC 42:

"probably the best step so far" ... DragonUser

"an invaluable utility" ... Dragon Update

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## DISK SOFTWARE FOR DRAGON 1644/160 NEW

**Pixie (Mindsoft)** £14.95  
Icon-driven drawing program. Requires joystick.

## WITH DRAGONDOS/CUMANA DOS 20

**DISDREAM (Greenleaf)** £79.95  
The standard Dragon Edition Assembler

**D.P.S. (Greenleaf)** £9.95  
Machine code database program

**SOURCEMAKER (Parsons)** £5.50  
Disassembler for use with DISDREAM

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**PRINTER CONTROL (MacGowan)\*** FROM £19.95  
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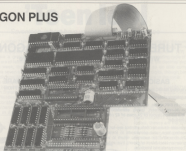
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